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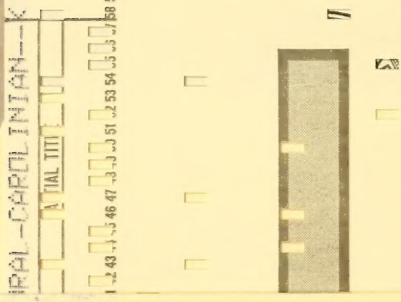

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THE

RURAL CAROLINIAN;

AN

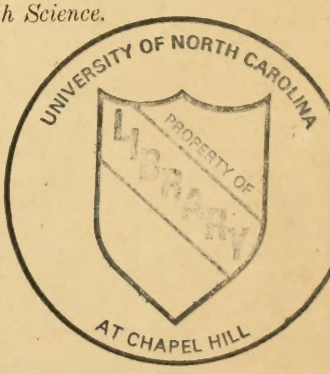
ILLUSTRATED MAGAZINE,

OF

Agriculture, Horticulture and the Arts.

D. H. JACQUES, EDITOR.

Progress with Prudence, Practice with Science.



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THE

RURAL CAROLINIAN.

Vol. I. OCTOBER, 1869. No. I.

David Dickson and Improved Farming.

David Dickson, undoubtedly the best and most successful planter in Georgia, if not in the whole South, is of English descent, and was born in Hancock County, Ga., July 6th, 1809. His father, Mr. Thos. Dickson, was a native of Virginia, served in the Revolutionary army, and soon after the close of the War of Independence removed to Georgia, where he died in 1827, at the age of a little over seventy years. His wife, the mother of the subject of our sketch, was born in North Carolina in 1777, and survived her husband

many years, dying in 1864, at the age of about eighty-seven years. Mr. Dickson, therefore, comes of a long-lived stock, and inherited from his parents what has been of more value to him, and contributed more to his success than the largest fortune could have done—an excellent constitution and a strong, well balanced brain—a sound mind in a healthy body. Beyond this he received little, his share of the paternal property amounting to only $1,200. His educational advantages were quite limited, but his clear, comprehensive intellect, his close observation, and the best use of his opportunities for reading and study, have enabled him to acquire a stock of practical knowledge, such as few with better early advantages can boast.

Mr. Dickson commenced his business-life as a small country trader. In 1835 he entered into partnership with Colonel Thos. M. Turner, and opened a store in Sparta, Ga., where they were successful; doing a heavy country business, which they continued to push with great energy for five years.

In 1846, having finally closed his mercantile business and made all the necessary preparations, Mr. Dickson returned to the place where he was born—his father's old homestead—and commenced farming with a capital of $25,000, acquired in trade. When the war broke out his property was valued at $500,000, all made in planting. His plantation in Hancock and Washington Counties (adjoining) comprises about 15,000 acres, and he owns another of 13,000 acres in Texas. These figures speak for themselves, and indicate a degree of energy, skill and forethought which few possess, and without which such grand results could not have been reached in any branch of business.

In person, Mr. Dickson is above the medium height, well formed, stout and robust. His complexion is fair, fresh and ruddy, and the expression of his countenance grave, serious, thoughtful and benevolent, with a vein of quiet humor, however, underlying the whole, reminding one of the best type of the Quaker, though he is not a member of that respectable and peaceful sect. He is plain in his dress, unpretending in his manners, speaks his mind freely and without fear or favor, and has very decided opinions on most questions of general interest. He looks younger than the figures we have given show him to be, and has all the activity and energy of a man of forty years of age. Long may he live to teach the South, by both precept and example, his system of Improved Farming.

MR. DICKSON'S PLANTATION.

During the first week in August last, with the interests of The Rural Carolinian and its fifty thousand prospective readers in view, we made a brief visit to Mr. Dickson's plantation, situated on the Little Ogoochee River, in Hancock County.

From the beautiful little town of Sparta, a drive of nine or ten miles through a pleasant rolling country, the wooded portions of which presented a mixed growth of pine, oak and hickory, brought us to Mr. Dickson's homestead. The soil of the country through which we passed, like the forest

growth, is of a mixed character, red clay and gray sand alternating. We passed several neat, well cultivated plantations, which seemed to indicate that Mr. Dickson's precept and example had not been without their influence. Cotton was here, as we had observed it elsewhere during our journey, the principal crop. Those who think our ancient king has been deposed are greatly in error. He yet lives and reigns in spite of war, emancipation and "reconstruction."

As we approach Mr. Dickson's plantation the soil loses its mixed character, the land becoming what is called gray, and the forest growth being mainly long-leaved pine.

On entering the plantation we observed that the gates and fences were all in a serviceable condition, and that there was that undefinable air of *thrift* about the place too generally lacking among us. Between the main road and the house we passed a large corn-field—the largest and the best we had seen during our journey. It was good corn, but the condition of the field slightly disappointed us. It was not free from grass, and had not been worked in the most skilful manner. We afterwards learned that it was rented to freedmen whom Mr. Dickson had not been able to induce to do the work just right; so when we referred to the field as the best we had seen, he said that it ought to have been a great deal better, and that he would not own it as a specimen of his farming at all.

We met Mr. Dickson at the house—a very modest cottage, such as you may see on many a small farm in Georgia or South Carolina, with nothing remarkable or pretentious about it in any way. Everything for use and comfort, and nothing for show is evidently the rule. The farm buildings and negro quarters are more likely to attract attention than the dwelling, as they are decidedly better than are usually seen.

A MODEL COTTON-FIELD.

The first thing that attracted our special attention as we approached the cotton-field was its smoothness of surface—the entire absence of those ridges and hills, made by the plow and the hoe, which mark the rows in our fields generally. The next noticeable peculiarity was its perfect cleanness. No fringe of crab grass and no straggling weeds were to be seen. Mr. Dickson does not attempt to make a crop of cotton and a crop of grass on his land at the same time. The cotton was a sight worth travelling all the way from Charleston to see. We had seen nothing like it during our journey. Some small patches on town lots in Sparta and elsewhere could show plants quite as tall perhaps, but the preëminence of Mr. Dickson's cotton lies in its stocky growth, its numerous heavy branches—and, above all, in its prolific fruitage—*the bolls and squares clustering thickly in double rows upon the branches.* "I do not cultivate cotton for the weed," Mr. Dickson remarked, "but for the bolls."

There had been a severe drouth, and much of the cotton we had seen elsewhere had shed leaves, squares and bolls to a greater or less extent, but here we observed no loss of this kind, the plants being fresh, healthy and

vigorous from bottom to top. In brief, here was cotton that promised a yield of two bales to the acre; and it was not on rich bottom land, but on what people are pleased to call a "pine barren"—not fresh pine barren either, but land that has been under cultivation for *seventy years*, and was so poor and worn out when Mr. Dickson bought it, we were told, that no one else would have it at any price. With these facts in view, one begins to appreciate the results of his improved system of farming.

The field of which we have been speaking will, under Mr. Dickson's cultivation, produce forty bushels of corn to the acre, and his corn crop never fails! No drouth burns it up. "I can tell in the spring," Mr. Dickson said, "where the *dry streak* will fall in summer. It always follows the bad farming." The "dry streak" never falls on *his* corn-field. We shall see why when we come to examine his mode of planting and cultivating corn.

We might speak at much greater length of what we saw and heard during our brief visit to Mr. Dickson's plantation, but what our readers are most interested in learning is, how the results we have described are attained. Mr. Dickson is successful. He makes heavy crops on poor land. He has acquired wealth by planting. Every planter and farmer, it is presumed, would like to be and do the same, and each is anxious to know how the thing is done.

MR. DICKSON'S SYSTEM.

We can tell our readers, in brief, how Mr. Dickson farms, but we cannot ensure every man who may essay to follow his example the same success. Few possess his intellectual capacity, his sound judgment or his executive abilities; but all may improve and approach, if they cannot reach, Mr. Dickson's high position among the great agriculturists of the present day.

The principal points in Mr. Dickson's system, as they struck us in our examination of his operations, are:

1. A *deep* and *thorough* preparation of the soil;
2. The liberal use of manures;
3. Level and *shallow* cultivation;
4. Rotation of crops;
5. Economy of labor.

Do you say that there is nothing new in all this? Perhaps not. In theory the principles which underlie the system have, in the main, been long since accepted by the best informed agriculturists of Europe and America; but our practice, with few exceptions, has been diametrically opposed to them, as will more strikingly appear when we look at the matter somewhat in detail.

First, then, in regard to the preparation of the soil. Mr. Dickson's maxim is, "*plow as deep as you can*," or say from eight to fifteen inches and subsoil every fourth year, *accumulating all the vegetable matter you can on the surface to be turned in.* Land thus prepared admits the air, holds moisture and allows the roots of plants to penetrate deeply, and thus ensure themselves against drouth. Do our farmers generally prepare their soil in this way, or make any approximation to it?

In the second place, everybody knows that manure is a very good thing for growing crops, but we go on, year after year, planting without manure, or with very little of it. Mr. Dickson, knowing that manure, judiciously applied, will pay, uses it *freely.* But what kind of manure, and how much? In the first place he returns everything to the land (after being eaten or used) which he has taken from it, except the lint of the cotton, and, in addition, gathers leaves, pine straw, and the scrapings of swamps, and digs muck to spread in his stock yards and to scatter broadcast on his fields. Then he makes up the required amount of the fertilizing elements by the application of a concentrated compound composed of Peruvian guano, dissolved bones, common salt, and land plaster in equal proportions by weight, mixing the ingredients himself. Of this compound he has used this season, if we mistake not, about 800 pounds to the acre (except on rented land) at a cost, probably, of not far from $25 per acre. Is such manuring an old thing—in practice, we mean—among our planters and farmers?

HOW HE PLANTS COTTON AND CORN.

But it is in the planting and working of his crops that Mr. Dickson's practice differs most strikingly from that of most planters. Let us see how he does it:

1. *Cotton.*—He makes the rows four feet apart, opening with two furrows a trench about eight inches deep. Into this deep furrow the manure is scattered and covered with a scooter plow, going about as deep as the other two furrows, and followed, on each side of the scooter furrow, by a turn-plow running seven inches deep. He opens the seed furrow with a bull tongue plow, drops the seed thickly and covers lightly with a board. The plowing is done with the famous Dickson sweep, running shallow—the last plowing not more than half an inch deep—and the plowing and hoeing is repeated as often as is necessary to keep the ground perfectly clean, *but the soil is not heaped up about the cotton nor the roots cut by either plow or hoe.* When the crop is "laid by" the ground is nearly level and smooth.

2. *Corn.*—The land being broken up at least eight or nine inches deep and sub-soiled if practicable, he lays off furrows, with a long shovel plow, *seven feet apart;* then, commencing at the opposite end, he opens out the furrow with a *longer* shovel plow, leaving the furrow open *seven or eight inches deep.* Whatever manure he uses is deposited in this furrow, three feet apart, and the corn dropped three or four inches from the manure. He covers with a light harrow one and a half inches deep. Observe that we have here deep *planting,* but not deep *covering.*

He gives his corn three thorough workings, keeping the field clean and free from grass, and planting a row of peas between each two rows of corn. The details of his cultivation we intend to give at a future time. It is sufficient to say here that the same principle of shallow plowing is applied to corn as to cotton. There is no hilling up, but a smooth, level surface.

Does not the reader now see why Mr. Dickson's corn never suffers seri-

ously from any ordinary drouth? Having for several years planted corn on a similar plan, though not quite so deep, we can add our own testimony, were any further evidence needed, in favor of deep planting and shallow cultivation.

Mr. Dickson's rotation in cropping his land is:

First year, Cotton;

Second year, Corn;

Third year, Small Grain;

Fourth year, the land lies fallow.

The resting of the land allows it to accumulate humus or vegetable matter, which may be increased by planting peas, (or clover, where it will succeed,) to be turned in at the proper time.

It would not seem very difficult to follow Mr. Dickson thus far, so as to keep within sight of him at least, but when we come to what we have called Economy and Labor, there are brought into play certain natural gifts with which few are so largely endowed as he.

"The farmer must make every stroke tell," Mr. Dickson says, and *he* does make every stroke tell. Not satisfied with increasing the productive capacity of the soil, he develops also, and still more wonderfully, the productive capacity of the laborer. This he accomplishes by using improved implements; by time and labor-saving modes of working, and, more than all, we think, by his peculiar talent for training and managing the laborer himself. This peculiar trait is most strikingly illustrated by the fact that under the old system, when labor was perfectly under control, he was accustomed to cultivate *thirty-three acres to the hand*, while other planters, as a rule, cultivated only fifteen; and to accomplish this he employed no overseer or driver.

Such is Mr. Dickson's farming. A general adoption of his methods, with only an approximation to his executive efficiency, would at once *more than double the products of the South*, and at the same time increase, year by year, instead of diminishing the fertility of the soil.

AGRICULTURAL REFORM.

Mr. Geo. W. Gift, of Memphis, Tenn., thus packs a great thought into a small space, and sends it forth to do its work:

"Reform must come. The working immense plantations by single individuals, possessing limited means, and dependent upon a demoralized class for laborers is being abandoned. Smaller areas, better cultivation and more work on the part of the white population is beginning. As a result, prosperity will and is already setting in. With prosperity will come increased inquiry for a better system of tillage and farm management. Then will come steel plows, barns and fine stock, manure heaps and plenty. Stick to your broad impoverished acres, and stand still if you like, but please allow the current of progress to go on."

Chalk in Rice.

[The following article, from the pen of a gentleman of close observation and of great practical experience as a rice planter, treats of one of the most common defects of the rice grain, one much affecting its price in market, and one about which least seems to be known, as to its cause and the mode of prevention. The subject is one of the utmost importance to the rice grower, with whom our correspondent's opinions are entitled to great weight, especially as they are founded on actual observation.—Ed.]

What is chalk in rice? And what are the means most likely to prevent or remedy this defect in the grain? If the first question can be satisfactorily answered, the answer to the second may not be found very difficult.

Let us examine the physiology of the plant, and observe the changes through which it passes in the several stages of the development of its head.

When the head is first shot out the chaff of the future grain is closed; the glumes are so sealed together as to be impervious to water. In a short time these glumes separate so as to allow the anthers to fall out and hang by their slender filaments. The pistil remains included between the glumes, and protected by them from rain. This separation continues until the impregnation of the ovule takes place. The anthers then drop off, and the glumes close and again become hermetically sealed. The ovarium now extends itself in a slender, thread-like form, along the interior of the back of the grain, (which is the straighter and narrower of the two glumes,) until it reaches the end of the chaff, and then gradually fills with a milky fluid, and enlarges until the entire cavity of the chaff is filled; the last portion filled being the middle of the "belly of the grain."

As soon as this process is completed, the milky fluid commences to harden, beginning always at the "back" of the grain and finishing at the middle point of the "belly." The entire grain, when first hardened, is of a dead white or chalk color—it is all chalk.

Now commences the final stage in the perfection of the grain, the process of becoming translucent, or "flinty."

This begins, as did all the previous stages, at the back of the grain, and finishes, in like manner, at the middle of the belly. If this process is interrupted before its completion, there remains a spot of chalky white, more or less large, as the process may have been interfered with at an earlier or later period—and be this spot large or small, its centre is always at the same point of the grain.

This, then, is chalk—clearly an *arrest of development* in the grain—and caused, we would naturally suppose, by some mismanagement of the plant.

We find, when rice is shooting, that it puts out from the lower joints of the stalk little rootlets which, floating in the water, branch into filaments almost as fine and delicate as cobwebs. These absorb nutriment from the water, most probably for the special purpose of completing this last stage in the growth

of the grain. If so, then the destruction or injury of these delicate roots will cut off the supply of material necessary to the completion of Nature's work, and the grain will remain imperfect.

The breaking off and treading upon these roots, by the laborer going through the rice to "pull long grass"—the exposure of them to the sun and wind, by the water being allowed to fall too low, or by changing the water during the *day*, causing them to perish—these, and possibly other causes, doubtless contribute to produce this defect in our staple.

The obvious mode, then, of preventing chalk in rice is to preserve these delicate roots and to supply them with good water, that the plant may continue the full and healthy performance of its functions, until the perfection intended by Nature shall have been attained.

The opinion here stated is based upon facts observed in daily examinations of the grain from the time of "shooting" to the harvest, and is, therefore, not mere speculation. F.

The Agricultural and Business Prospect.

We condense, from a carefully prepared and most interesting statement of the agricultural and business prospect of the South, which appeared in the *Charleston Daily News* of September 1, 1869, the following pregnant facts:

THE COTTON CROP OF 1868.

The cotton year, just closed, has been a satisfactory one to the planters. Prices have ruled well up, and middlings, which opened in September, 1868, at 28c., fell rapidly to 21c. during that month, and did not descend so low again during the year, speedily rose to 23 a 24c., and remained about these figures for some time, and in January last improved to 25c., and soon after to 27 a 28 and 28 a 29, and which rates continued to June, when they advanced to 30 a 32, and remained at about these figures to the close of the commercial year.

THIS YEAR'S CROP.

The present crop, with favorable weather, will almost certainly reach 2,800,000, and may, under usually good conditions, go up to 3,000,000. Even with this last result, good prices, we think, may be looked for, as the world is bare of a supply, and middlings will not descend below 25 cents, at which rates the American crop will be worth near $300,000,000, a sum truly enormous for one product, and which must soon lead to great prosperity in this section.

CROP OF SOUTH CAROLINA.

The general appearance of the cotton crop has been remarkably good, until lately, when serious complaints have been made in some districts of damage from rust and shedding; but with good weather from this out we look for a decided increase in the growth of the State, and it is probable that from 200,000 to 225,000 bales may be reached, against about 180,000 bales the year before.

THE FOOD CROP.

The food crops of this section for the year have yielded well in some grains,

while others have been quite deficient. The wheat harvest of the past winter was generally satisfactory, but in consequence of the very dry summer, the corn crop in some districts will be very short; but the larger portion of the South will, perhaps, secure food products enough to carry them through without purchasing heavily.

THE SEA ISLAND CROP.

During the present summer the weather has been exactly of a kind to prevent the development of the caterpillar, the great enemy to the plant, and the crop has progressed in the most satisfactory way, the growth, perhaps, never looking better. The caterpillar has, however, appeared at numerous points, and has, in some cases, done serious damage, but has not shown generally a disposition to spread, and the planters are still hopeful of an escape from a general visit.

THE PHOSPHATES.

The invaluable deposits of this land fertilizer, so fortunately located on the seaboard of this State, are daily developing in value, and their richness and importance are steadily increasing. The trade shows a large growth, and the exports of the year have been near 20,000 tons (among which were several thousands to Great Britain) against 4,000 the year before.

VEGETABLES AND FRUITS.

The climate and soil in the vicinity of this city, and along the Southern coast, is of such a nature as to produce a varied and valuable vegetable growth, which, united with the central location of this place and the various railroad and steam lines meeting here, has given this point a leading importance in the growing trade in vegetables and fruits from the South for the supply of the Northern cities. There will be much to overcome in this branch of agriculture before it can be exactly on the footing necessary to make it a great success, which it is destined ultimately to be.

PRICES OF VEGETABLES.

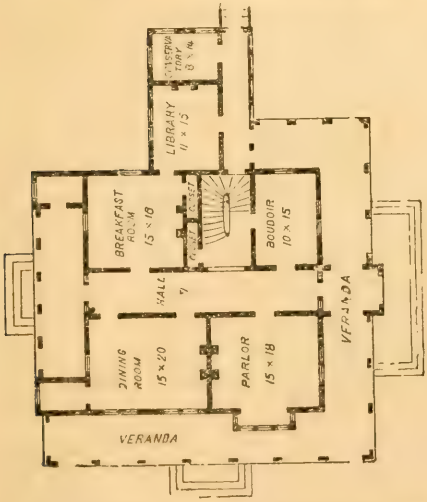
At the commencement of the season prices were good, but the great competition soon reduced them. Green Peas, which in the first of the season sold for $10, fell to $1 25 per crate. From April to June prices varied as follows: Beans $5, fell to $1 50. Potatoes $7, fell to $1 75. Cucumbers $7, fell to 80c. Tomatoes $7, fell to $2. Peaches ranged from $20 to $4 per crate.

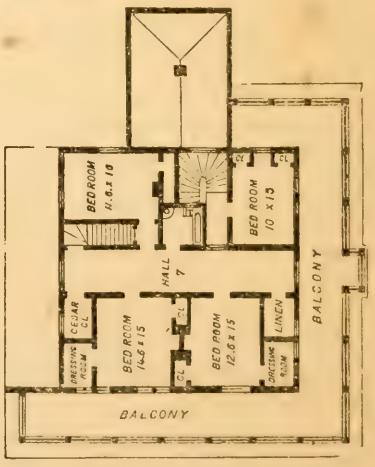
CHARLESTON.

Everything indicates a large and profitable trade at this point during the season now at hand, and should the agricultural prospect turn out as well as appearances would indicate, we look for about the following exports for the business year now at hand:

Cotton, uplands, 300,000 bales, at $100 per bale	$30,000,000
Cotton, sea islands, 15,000 bales, at $200 per bale	3,000,000
Rice, 45,000 tierces	2,500,000
Phosphates, 30,000 tons	300,000
Naval stores, 75,000 barrels	250,000
Lumber and timber, 20,000,000 feet	200,000
Domestics and yarns, 15,000 bales	2,000,000
Sundries	1,000,000
Total	$39,250,000

A Southern Country House.





The design herewith presented was made to meet the wants and tastes of a particular family, but will be found, we trust, to be equally well adapted to the use of many others. It is planned on a liberal, and, at the same time, an economical scale; the halls, stairs, veranda, arcade, balcony, etc., being spacious to meet the requirements of a warm climate, while the rooms are of a moderate but comfortable size, and no waste of space is allowed.

Diversified Agriculture.

It was a singular idea for a warm climate that the human family only needed clothing—that cotton must be the *summum bonum*. Whether cotton, wheat, or any other crop, is made a speciality for whole States, failure must result. If proper effort is put forth the market is glutted and the price low, while the cost of everything else will be enhanced many fold by the labor and cupidity of our army of producers and carriers. The old cotton crops, with very few exceptions, never commanded $200,000,000; the present crop, half as large as the largest ever made, is worth more than $150,000,000 in gold to-day, while corn is becoming plenty, wheat increasing, and the people more self-reliant and nearer self-supporting than ever before. No cotton crop ever brought so much money as the wheat crop of 1867, yet wheat is but one of the many necessaries of life, the aggregate of which would swell into an equivalent for many crops of cotton. I have written elsewhere: "While cotton may ever be a prominent crop, it should only be cultivated as *one* of several products for exportation, and an ample sufficiency of everything consumed upon the farm should be grown at home. The idea that Southern horses should be obtained in Kentucky, flour from Missouri, and part of the corn supply from Illinois, has been a curse to the Cotton States. Specious and false was the theory of reciprocity of material interests; it never can be profitable to carry bulky agricultural products a thousand miles, to be used on soils as rich and cheap as any in the world, at an expense for transportation far exceeding the cost of production at the place of consumption. The variety of which this region is capable is truly wonderful; embracing all the cereals, grasses, vegetables, and fruits of the temperate zone, with many of the productions of the tropics. A belt extending from twenty-five degrees to thirty-nine degrees north latitude, including a range of elevations amounting to 6,000 feet, and geological formations from the primitive granite to alluvium now in the process of deposition, cannot become a wealthy region, rich by persistence in the culture of a single product."

The sugar interest, in the future, will be one of immense magnitude. Instances are reported, the past season, of five hundred dollars gross returns per acre of cane. Instead of 200,000 hogsheads of sugar, the former product, our wants in the immediate future require the manufacture of 700,000 hogsheads; and there is no good reason why a full supply and a surplus for exportation may not be produced upon the Mexican Gulf coast. At the present rate of increase this result could be attained in less than five years. The crop of '67 was less than fifty thousand hogsheads; that of '68 was considerably above one hundred. Our cheap lands, superior soils and fine climate, give advantages which Europe never enjoyed in building up her really substantial beet sugar interest.

Rice as a production has never been developed as it must be in the future. It is of superior quality, and is sent to Asia and the islands of the Pacific for

seed. I have before me the journal of the Agricultural Society of New South Wales, with notice of the recent introduction of Carolina rice. It is eminently suited to the lowlands of the coast and adjacent islands, and its culture can be largely extended with profit.

The Ramie, (*Boehmeria tenacissima,*) a fibre of remarkable strength and beauty, is already cultivated, and hopes are entertained of successful practical results in its culture. Our paper-makers may yet obtain from this region a surfeit of cheap material. The Esparto grass, (*Stipa tenacissima,*) of the mountains of Southern Spain, which is extensively exported for paper-making in England, will be introduced among the hill lands of the South by the Department of Agriculture. The young reeds of the canebrakes are now largely used for paper-making, and a great variety of other fibrous material will be utilized for a similar purpose.

The production of oils from cotton seed, the castor bean, (*Palma Christi,*) and other oleaginous seeds which grow to perfection in the Southern climate, will yield a mine of wealth to those engaged in growing the plants and in expressing the oils, while the residuum, or cake, will supply the most nutritious cattle foods and fertilizers. Initiatory enterprises in this direction have proved their feasibility and glimpses of the wealth which they will ultimately create.

The culture of peaches, grapes, olives, figs, oranges, lemons, bananas, and a great variety of other fruits of the semi-tropical and temperate climates, will constitute a prominent feature in the industrial system of the future. Splendid results are already attained, sufficient to give augury of the coming greatness of Southern fruit growing. J. R. DODGE.

Experiments with Barley and Clover.

Mr. Editor: The times have changed, and with them must change many of the habits of our people. Old things have passed away, and many things have become new. Amongst none of our population are these facts more materially realized than among the planters. In by-gone days the Southern planter was *de facto et de jure*, as the lawyers would say, truly and really the monarch of all he surveyed. The land and the laborer, as well as the produce, were equally merchantable. Not so now-a-days. The laborer is the property of himself, and is in most cases a perfectly irreliable producer. The planter may purchase, but can seldom effectively systematize labor; hence the necessity of his becoming more self-reliant; and to become self-reliant, the Southern planter must not only change his habits, but must also change his crops, his culture, and his implements. More stock must be raised, that more manure may be made, that more land may be enriched, that more crops may be grown, that more money may be realized. To feed more stock, more forage must be housed; and to house more forage, crops must be grown that

require less cultivation. In short, less cotton and corn must be grown, and more wheat, rye, oats, barley and clover must be sown.

Upon either of these grains volumes might be written, which, if read, would profit the South Carolina planter; but this article must be confined to a few words upon clover, entirely practical and suggestive, and the simple narration of an experiment feasible and profitable to the humblest planter in the State.

On the tenth day of August, 1867, I enclosed one and a half acres of old red clay land, uncultivated for many, many years, and too poor to cover its own nakedness with a coat of weeds. This lot was again divided into two equal parts, and in each "pen" were kept every night (alternating weekly) twenty head of cattle and fifty sheep. As often as the pens were alternated they were broken up with narrow plows. If too hard, they were left until rain, and then plowed. The last week in October, '67, the cross fence was removed, the acre and a half well and deeply plowed and cross plowed with one-horse plows, and immediately sown with three bushels of barley and plowed in with scooters. A peck of clover seed was then sown and harrowed in with a one-horse iron-toothed harrow. A perfect stand of both barley and clover was secured, and in March, '68, a bag (200 pounds) of Soluble Pacific was sown broadcast upon the growing crops. On the tenth of April I began feeding the barley, and for six weeks it was the only long forage fed to nine head of mules and horses, and every morning, noon and night during that time, each animal had as much as he could eat.

In November, '68, a bag of Wando, (166 pounds,) mixed with 100 pounds of plaster, was sown broadcast over the acre and a half. In May last the clover was mowed with a Buckeye Mower, and eight two-horse loads of beautiful clover hay hauled off the lot.

One half acre of the acre and a half was measured and mowed to itself, and housed and fed to thirteen mules and horses, and it supplied them bountifully three times a day for eight days and a third.

On the 7th of June a bag of Alta Vela guano, (200 pounds,) mixed with 100 pounds of plaster, was again sown on the clover stubble, just beginning to grow off beautifully, and to-day, 22d June, the second growth of clover is nearly knee high, and as rich and luxuriant as can be found in the limestone lands of Kentucky. If July is a seasonable month, the second crop will, in all probability, yield eight more loads of winter forage for cows and sheep. This crop is said to be injurious to horses and mules, but excellent for other stock.

Now, Mr. Editor, the only difficulty with the South Carolina planter in raising an abundance of stock is the lack of winter food. Our old fields and uncultivated lands will forage ten times the amount of stock we have, from 1st May until 1st November. The feed for the other six months is the rub. This can only be procured by sowing small grain and clover. Small grain straw, sheltered at the threshing and salted as threshed, is equal to good fodder, and far better for winter feed than most of the fodder saved. And an acre of good clover will yield more winter food, infinitely superior to the *best*

fodder, than one freedman will pull from the corn stalk during the whole month of August. Then why will our planters not grow clover? Let me beseech every man who reads this article, if he has but a garden to attend, to sow a small patch this fall of clover seed, and treat it as I did the above lot, and report in future the result of his experiment. Nature has done much for our beloved section, and we can do much more for ourselves if we will only make the effort, and not allow Nature's suggestions to be heathenized by the lazy, shiftless Ethiopian.

D. WYATT AIKEN.

Advantages of the South.

"A Southerner," in a communication to *Hearth and Home*, New York, specifies some of the advantages of the South as a farming country as follows:

"1. A man can produce more upon a given quantity of land. The summer is so long, that he can grow two crops in succession upon the same field. I have often seen in the Palmetto State both wheat and corn—maize or Indian corn—gathered the same year from the same soil, the latter being planted after the former had been harvested. Last autumn I saw lands, from one acre of which four hundred bushels of Irish potatoes had been gathered, upon which were then growing a full crop of beans, both marketable products. But there are dozens of productive growths that may be arranged so as to yield two crops upon the same soil the same season in this way. Of course this doubling the labor of the soil is exhaustive; but the means of renewal are well known, and easily and cheaply prepared to suit each particular growth. The mild season covers seven or eight months of frostless weather.

"2. He can make better crops. Many crops mature better—better in quality, I mean here—than they do in colder latitudes; as wheat and most grains. Southern wheat contains more gluten than Northern, and is, therefore, more nutritious, rises better, and is more available in making macaroni, vermicelli, and such articles of that kind as depend for their quality upon the gluten—formerly called the vegeto-animal principle—contained in the flour. Southern flour commands a higher price in the markets of the world by reason of its greater proportion of this element.

"3. He loses no time in winter. This season here is so short and so mild that out-door work is never interrupted beyond a day or two by bad weather, and that occurs as often in summer as in winter. Snow rarely ever lasts more than a couple of days, and very rarely reaches as much as four inches in depth. Most winters have but one snow. Many winters have no snow at all. The thermometer falls as low as zero—Fahrenheit—hardly once in twenty years. Ten degrees above zero may be given as the minimum temperature in this latitude and at this elevation. Our streams never freeze over.

"4. He can save his produce more certainly and at less expense. Apples and potatoes, with all vegetables and fruits that are to be kept through the winter, are kept either in banks or cellars of the simplest kind, that need no warming, or graduation of heat or heat-measures.

"5. He can winter his horses and cattle more cheaply, they requiring less winter feeding. Indeed, at all times during this season, even in midwinter, stock can gather food by grazing about the fields.

"6. He loses no time from the preparation of his composts and manures, during the winter, by freezings; nor does the low temperature often interfere with the chemical processes in this preparation.

"7. The bee-keeper, in addition to having nearly twice as long for his bees to work in the year, has far less expense in wintering them. He need not provide a cellar for them in winter, not even an enclosure, but merely a shelter, which is more necessary, perhaps, in summer than in winter, but certainly necessary for summer in all latitudes. Bees rarely require feeding in winter any more than they do warming, unless they have been robbed too late in the autumn. There are very few weeks, even in winter, in which bees cannot gather something for food.

"8. The wool-grower enjoys advantages equally great with the bee-keeper.

"9. The vegetable gardener has an almost limitless range of vegetables and fruits, from the earliest strawberry, that ripens a month before New York even is rid of its river-closing ice and banks of snow, to the latest grape that is gathered in December. Some varieties of winter turnips grow in mid-winter.

"10. The manufacturer also—if the planter desires to blend the two—can find, in addition to the above advantages of climate, water-power suited to any conceivable kind of machinery.

"11. Lands are cheaper—prices just now in this State ranging from one to five dollars an acre for good lands. Thousands of acres of inferior land can be be bought for fifty cents an acre.

"12. Fuel is cheaper and less needed.

"13. If he desires to turn his attention to cotton, he can apply his system of culture to that with success. A man can readily manage ten acres of cotton. An acre can, with manuring and care, be made to yield five hundred pounds of cotton for the market—ginned cotton. The price is about twenty-five cents a pound: that is $125 to the acre, or $1,250 to ten acres. I know the names of parties who have the past year raised two thousand pounds of seed cotton to the acre, which is usually rather more than five hundred pounds of market cotton."

The South and the West.

"The South is evidently about to start afresh on the race for wealth and power. In the next ten years, beyond a doubt, we shall find that the fifteen States which comprise the Valley States, and whose interests are wholly agricultural, will be the wealthiest portion of the Union. * * * The South is to become rich and prosperous by developing immigration and laying hold of the great assisting enterprises of the age. Establishing direct commerce with foreign ports; laying the rails of an unobstructed road to the Pacific; redeeming and securing rich lands that are rendered valueless by inundation; encouraging the steady flow of immigation, and diversifying the objects of industry to the largest extent; these are the means by which that section of the country is to become restored, and, once being restored, to take its place in the Union with the influence that legitimately belongs to it. The West and the South together, both being agricultural in their fundamental interests, will very shortly throw two-thirds of the votes in Congress; and these being backed by such material prosperity and growth as the world never before saw, it is not necessary to emphasize the inference which so naturally follows."—*Boston Post.*

Little Willie at the Farm.

"GIVE US SOME."

Good little boy, dear little boy,
With your bread and butter sweet,
We, poor chicks, are hungry too,
But we have no bread to eat—
Give us some! Give us some.

Cotton Seed Oil Cake.

AS MANURE.

Very numerous and carefully conducted experiments in England and Germany prove that oil cake stands very high as a manure, whether applied by itself, or in combination with other manures. It is adapted to all kinds of crops, since it contains all the ingredients necessary to the growth of plants, and, especially, since it contains in large quantity those most necessary ingredients, nitrogen, phosphoric acid and potash.

The oil in the seed and in the oil cake contributes nothing to its efficacy as manure. On the contrary, it is rather a hindrance, since it retards decay. It follows, therefore, that the cake is greatly superior to the seed, and that the more thoroughly pressed the cake is the better.

Oil cake is (from the large quantity of nitrogenous matter and the ease with which it decomposes) essentially a stimulating manure, like Peruvian guano. The following table gives the value of rape seed cake as compared with other valued manures. Cotton seed cake is still richer, both because the cotton seed is more nitrogenous, and because the cotton seed cake is free from hull:

1 cwt. rape seed oil cake, equal to 18.20 cwt. stable dung;

1½ cwt. rape seed oil cake, equal to 1 cwt. bone dust;

3 cwt. rape seed oil cake, equal to 1 cwt. good Peruvian guano.

There can be no doubt that the relative value of cotton seed cake is greater than indicated by this table.

AS FOOD FOR STOCK.

As a flesh producer, and therefore as food for growing or for laboring animals, oil cake is probably superior to the grains.

According to the experiments of Lawes, the distinguished English agriculturalist, the manure derived from stock varies immensely in value according to the nature of the food on which the stock is fed. The manure of stock fed on cotton seed cake stands first on his list, being more than thirty times as valuable as the manure from an equal weight of turnips, and four times more valuable than the manure derived from an equal weight of Indian corn.

The following is Mr. Lawes' table, showing the actual gold value of the manure derived from one ton (2,000 lbs.) of different foods:

Cotton seed cake, (hulled,) $27 86; rape seed cake, $21 01; linseed cake, $19 72; malt dust, $18 21; lentils, $16 51; linseed, $15 65; tares, $15 75; beans, $15 75; peas, $13 38; locust beans, $4 81; oats, $7 40; wheat, $7 08; Indian corn, $6 65; malt, $6 65; barley, $6 32; clover hay, $9 64; meadow hay, $6 43; oats straw, $2 90; wheat straw, $2 68; barley straw, $2 25; potatoes, $1 50; mangolds, $1 07; Swedish turnips, 91 cents; common turnips, 86 cents; carrots, 86 cents.

These actual values are, of course, correct only for England, but the relative

values are of universal application, and for this reason this table deserves to be studied by every farmer. The relative values seem to be closely connected with the amount of nitrogenous matter contained in the food.

It is quite possible that this indirect method of using the cotton seed cake as manure may prove most profitable to the farmer. If so, the use of cotton seed may largely replace the use of corn in stock feeding.

CONCLUSIONS.

The great value of cotton seed, as manure for corn, is well known to every farmer. Its value also as provender, when stock will eat it, is also well known. Now, there can be no doubt that for both these purposes, the oil cake is greatly superior to the seed. As manure, it decomposes readily, and may be applied to all kinds of crops, alone or in combination with other fertilizers. As food, it is eaten readily by stock, and is easily digestible. I believe that a given quantity of seed hulled and pressed into cake, though greatly diminished in weight, will go farther, both as manure and as provender, than the seed from which it was pressed.

JOS. LeCONTE, M. D.

[In connection with the proposed erection of oil mills in various parts of the country, the subject discussed by Professor LeConte becomes an interesting one to the farmer. The Columbia Oil Mill proposes to operate on the following plan: The capital stock to be subscribed, as far as possible, by farmers living near the railroads communicating with Columbia. The mill will be supplied with seed to press by the stockholders on the following terms: The mill will send bags for the seed, and will pay the freight from the depot of shipment to Columbia, and will pay to the farmer, in cash, on delivery, 33⅓ cents per hundred weight of raw seed. The seed will then be pressed and 33⅓ pounds of hulled oil cake (the average product) be returned to the shipper of the seed for every hundred weight of seed sent.—EDITOR.]

Moule's Earth-Closet.

The fact that dry earth is a powerful absorbent and deodorizer has long been known, but until recently no systematic utilization of the principle involved has been attempted. The introduction of Moule's Earth-closet, simple and unpretending as the thing itself may be, seems likely to prove one of the most important events of the day.

The principle of the Earth-closet is, in general terms, simply the use of sifted dry earth for the deodorization and disinfection of human fæces. It has been shown and proved by actual experience that by the simple use of dry earth in quantities that even the dust of a country road places within the reach of all, the waste of our bodies may be rendered *immediately* and *permanently* inodorous. It matters little (except for the question of convenience)

what means are adopted for applying the earth—a barrel in the cellar with a seat over it and a box of dry earth beside it; paper bags of earth to be used in connection with any suitable vessel; any arrangement, in fact, by which the fæces may be covered with earth will amply suffice, and the necessity either for going to a distant building or of creating an offence in the house is entirely removed. The requirements of the laws of health may be fully met without fear of exposure to danger, inconvenience or annoyance.

In the practical application of the principle it is chiefly important:

1. That the earth be not too sandy—any fertile soil will do;
2. That it be dried, (and this may be done in the sun;)
3. That it be sifted, (at least through a coal-sifter;)
4. That the bottom of the vessel be first covered with earth to prevent adhesion; and
5. That enough earth (a pint or more) be thrown on the deposit to entirely cover it.

This is all. The deposits may accumulate in the house for a whole year, or they may be removed daily, as circumstances suggest. They will, at no time, be more offensive than so much earth from the garden.

For those who desire something more convenient and systematic, commodes for private rooms and apparatus for privies are constructed.

The bearings of this new application of an old principle upon agriculture, as a preventive of the greatest waste of the fertility of the earth, will readily suggest themselves, and will be found touched upon in another place.

Another outgrowth of the system is thus set forth by Geo. E. Waring, Jr., in the New York *Evening Post:*

"One of the experimental commodes sent out by the Earth-closet Company, was placed at the disposal of Dr. Addinell Hewson, of the Pennsylvania Hospital, (in Philadelphia.) Its introduction into the surgical ward, where it has been for two weeks in constant use by about twenty patients, and has been subjected to the severest test possible, has been so entirely satisfactory that it is proposed to substitute earth-closets for water-closets wherever these exist in that institution.

"At the time of its introduction there was lying in the ward a patient suffering from a very severe compound fracture of the lower leg. The wound was in an unhealthy condition, and its exudations, amounting to a pint in twenty-four hours, were so offensive as to cause a sickening and even dangerous stench, that the excellent ventilation of the ward and the use of the usual disinfectants were hardly able even to mitigate. It occurred to Dr. Hewson to test the power of dry earth to absorb this odor, as it had that of excrement. The effect was magical. Not only was the offensiveness entirely overcome, but the effect on the character of the wound itself was such as no previous treatment had been able to compass. The suppuration was, within a few days, so reduced that the daily dressing of a single half pint of earth was not even saturated; the edges of the flesh wound lost their inflamed character; the intense pain of the sore was entirely relieved, and a healthy granulation has ensued."

Mr. Waring describes a number of additional cases which fell under his own observation, but we have only room for the following:

"Among the patients whom I saw in the Pennsylvania Hospital were two

who were afflicted with serious varicose ulcers, after prolonged suffering, and with little relief from the usual treatment, have ceased to be offensive to their wardmates; they find their sores growing daily smaller; all pain and inflammation have left them; and they feel the certainty of an early cure.

"Another was a railroad brakeman whose hand was—a year and a half ago—crushed between the coupling heads of two cars, and who has never been free from pain, and seldom from intense pain; whose hand, from the wrist to the knuckles, was a festering mass of carious bones and inflamed flesh, and whose system had been so reduced that he could not have survived the amputation which alone can entirely relieve him, is now happy in freedom from pain. His flesh wound has taken on a healthy character, and his strength is fast returning.

"Surely, with our gratitude to the Vicar of Fordington, who has conferred the greatest benefit on the human race that it has ever been given to one man to accomplish, we must unite our thanks to the senior surgeon of the Pennsylvania Hospital for thus applying the principles of his invention to the saving of life and limb, and to the alleviation of unspeakable suffering.

"And the end, I trust, is not yet. It seems inevitable that the pustules of small-pox must give up their pain and their offensiveness at this magic touch of mother earth, and if it is true that its contagion spreads from its exudations, may we not hope that Dr. Hewson has bound its feet as Mr. Moule has those of cholera?"

Making Wheat on Poor Land.

A correspondent of the Newnan (Ga.) *Herald* reports the result of a contest for a silver pitcher for the largest amount of corn, wheat or cotton raised on a single acre of unimproved upland, the prize being offered by the Palmetto Agricultural Club. He says:

"There are some thirty belonging to the club—many of whom were not so situated as to enter the field of competition for the prize on wheat—however, a few did. On last Saturday they met to award the prize, and it was given to Rev. Sion P. Steed, who raised thirty-six and a third bushels. Mr. W. A. Smith was next in the race, he having made thirty-five and a third bushels.

"The five highest raised an average of twenty-nine and two-third bushels to the acre. This was on poor old fields, enriched for that crop alone, by various kinds of fertilizers, cowpening, etc. Some in the State have made more where the land was already enriched, but I've heard none to equal these on poor upland.

"The design of the society in taking old worn land was to see how much it will cost to bring such land to a high state of cultivation in the course of a series of years with the various crops. Of course the land will be vastly better for the next year's experiment.

"The kind of wheat raised is the Tappahannock. It weighs from sixty-two to sixty-three pounds to the bushel.

"Mr. W. A. Smith sent a portion of it to mill and got forty-five pounds of flour per bushel. These gentlemen offer to sell this wheat at four dollars per bushel; or they will furnish it to any man who will prepare two acres of land in the same way, and sow one acre with this and the other in some other kind of wheat—giving them what the Tappahannock makes more than the other. They think it the very wheat for this country.

"Palmetto is just above the southern line of Campbell County."

Department of Horticulture and Rural Art.

Orange Culture in Florida.

SOME twelve years ago, a few persons, with a view to experiment, or for ornamental purposes rather than for profit, planted a few orange trees, and were laughed at for so doing; but time has shown that they were not so foolish as their neighbors seemed to think; and now, for a few years past, quite an excitement has been raging here on the subject of fruit culture, and particularly with reference to the orange, of which I have little doubt that at least one hundred thousand trees were set out, or cut for budding in the wild groves, during the year 1868. The earlier planters were, meanwhile, deriving a handsome income from their few experimental trees already in bearing.

Many of those who now embarked in the enterprise were wholly without experience or practical knowledge, and with ideas far more expanded than their purses. These persons set out with the ambitious design of planting one hundred acres to begin with. It is very doubtful if one person of that class has reached that number, and comparatively few have accomplished anything worth mentioning, while those who fixed their figures at ten acres, have, many of them, made good progress, and will eventually succeed beyond their own expectations. It is not a business that can be driven. It must have time to show its results; but when once established it will astonish people by the rapidity and extent of its development.

The orange tree is one of the most beautiful that grows in tropical or semi-tropical climates, furnishing, at different periods, more varied attractions than any other flowering shrub or tree known to the botanist. In the spring, the white blossoms, profusely scattered among its dark, green foliage, present a sight as grateful to the eye as their fragrance is to the sense of smell; and in the autumn, the golden spheres, which take the place of the white flowers among the shining leaves, are no less beautiful, while they furnish the most pleasant refreshment to the palate and the stomach. These are reasons enough for planting orange trees about one's house; but this is not all. When in full bearing they will afford an income to their owners with which that of long cotton, or any other plant, occupying the same area of ground, cannot compare.

The best method of propagating the orange is by seed, as they come true to kind when the seeds are pure. They bear in about seven years from the seed; but many prefer to transplant the wild stock and bud its shoots, as

they obtain fruit in about half the time it takes to get it from the seed, but I do not think the tree so valuable. By planting a few seeds every year, you have a stock constantly on hand, which may be transplanted from the nursery to the grove when about three years old. The seeds should be planted soon after they are taken from the fruit, in a moist, partially shaded place, covering them about one and a half inches deep.

There are many opinions as to the distance apart that it is best to plant, but after many years' experience, I have adopted twenty feet for all village or town lots, which gives one hundred to the acre. Few could afford more room, and many allow much less. To put them any nearer detracts much from their capacity for bearing after they become large trees. They require light and air in order to bear well. If one is in the country, and has plenty of room, there is no objection to putting from twenty-five to thirty feet apart, and the farther apart you plant the trees the finer and more productive will they be, and the longer can you cultivate the land among them with benefit to them and profit to yourself.

In regard to the soil best adapted to the growth of the orange, there are also many opinions, and I attribute the difference to the fact that they come as near growing and doing well in almost any place you put them as any tree I know. I have seen them in low land, approaching boggy, and in all classes of land from that to the bald black jack sand hill, and in all cases have seen them doing exceedingly well; and, therefore, one who has them growing finely on one class of soil, thinks he has got the right place, and that no other will do so well. All that is necessary is to give them a chance elsewhere, and his mistake will be apparent. This point is finely illustrated by the fact that there are thousands of acres of them growing wild in different portions of East Florida, in every possible kind of soil.

I am of the opinion that, when its culture is thoroughly understood, and its advantages properly appreciated, the orange will be largely grown throughout East Florida, and will prove far more profitable than anything else that can be grown on the same land, and with the same amount of labor and capital. No surer crop can be named. All others fail at times, but during an experience of twelve years I never have known the orange crop to fail, though I have seen the trees in blossom when the weather was cold enough to freeze during the day. The severe freeze of 1868, which killed many of the trees in this vicinity, did not prevent those that survived from bearing a bountiful crop, and, judging the future by the past, we may reasonably conclude that we shall not be likely to have another such winter in the next quarter of a century, the last but one having occurred in 1835. Both on that occasion and in 1868, the fruit was frozen quite solid, and, of course, spoiled. Many of the crop of 1868 are still hanging in the trees, and look as bright and sound as ever, but they are entirely dry and worthless. In October the new crop will be ready, and we shall again have oranges in abundance.

WILLIAM EDWARDS.

Micanopy, Fla., August, 1869.

Strawberries, Old and New.

CARCELY a year passes which does not witness the introduction of numerous new varieties of the strawberry, each of which is sent forth with a great flourish of trumpets as something remarkable and destined to throw everything else into the shade. A few of them really possess a degree of merit which entitles them to the attention of cultivators, and to a fair trial in different localities; but of these not one in a hundred proves worthy of general cultivation. The greater number of them have merely a local value, succeeding in certain soils and neighborhoods, and utterly failing in others.

Very few varieties have been originated at the South, and, though a few of the Northern sorts have proved admirably adapted to our climate, yet many of the finest ones are utterly worthless with us on account of the plants not being able to withstand the heat of our summers. By growing seedlings here, we should, no doubt, soon secure new varieties better adapted to our wants than most of those now sent us from the North and from Europe. At the proper time we shall give full directions for producing and testing such seedlings.

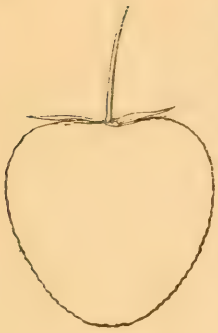
In considering the question, which are the best varieties, the purpose for which the fruit is to be grown must be taken into account, as the most desirable sort for home use may be entirely unsuitable for market; and the best market berry may be lacking in some of the essentials of a good desert fruit. In a market berry size, beauty, firmness of flesh and productiveness are essential. The amateur cultivator, who only wants a small quantity of fruit for his own table, does not require a berry that will bear carriage, and is content with moderate productiveness. Beauty and high flavor are the most important qualities; but it is also desirable that the plant continue a long time in bearing.

Of first-rate market varieties there are but few. Even in the vicinity of New York, where there are, perhaps, a hundred sorts in cultivation, only three are at all prominent in market—Early Scarlet, Wilson and Triomph de Gand.

WELL TESTED AND VALUABLE VARIETIES.

Among the varieties which may be considered well tested, and worthy of general cultivation in the South, are Wilson's Albany, Longworth's Prolific and Triomph de Gand. We have grown all these and can speak from experience. As market berries we consider them the best now known.

1. *Wilson's Albany.*—This is the most widely popular and most generally cultivated of any variety ever introduced, and is truly a remarkable sort, succeeding in all soils and climates from Maine to Florida. It is large,



Wilson.

handsome, firm fleshed and very productive. Here it often produces two distinct crops the same season, and by heavy mulching and copious watering, may be kept in bearing several months. It is by no means of the highest quality, being very acid, (less so here than at the North, however,) but with a plenty of sugar is not unpalatable. It is somewhat difficult to raise plants of this variety in our climate, as it is very late in putting out runners, and by the time it is ready to propagate itself the season has generally become unfavorable, being too hot and dry; so that unless the ground be shaded, many of the young plants fail.

2. *Longworth's Prolific.*—This is an old Western variety now little cultivated except at the South, but with us one of the best. Its quality is better than that of the Wilson, and it is a few days earlier, but not quite so productive, continuing but a short time in bearing. It propagates itself rapidly and the plant is very vigorous.

Triomph de Gand.

3. *Triomph de Gand.*—As a rule the foreign varieties fail here, not being able to withstand the heat of our summers, but the Triomph is an exception. It is a large, irregular, conical, but often flattened berry, of a bright crimson color, and a firm, crisp flesh of mild flavor. It requires a stronger soil and higher cultivation than the preceding sorts, but with proper treatment is very productive and profitable. Were we relying upon our own experience alone we should append to the foregoing list the following

ADDITIONAL VARIETIES.

1. *Victoria*—(Trollope's).—This has proved with us one of the most desirable varieties we have tried. On good, strong soil and with good cultivation, it has been wonderfully productive, and of a fair though not high flavor; but others who have tried it have not been equally successful—Mr. Berckmans, (excellent authority,) for instance, pronouncing it worthless. It is, doubtless, one of those variable kinds that succeed in some localities and fail in others. It is an old English variety of luxuriant growth, and where it succeeds, produces a very large and handsome berry, and continues a long time in bearing.

2. *Peabody's Seedling.*—One of the best strawberries, so far as quality is concerned, ever produced in America, is Peabody's Seedling, a Southern variety, originated by Mr. Charles A. Peabody, near Columbus, Ga. It is too poor a bearer for profitable cultivation as a market variety, but there need be no difficulty in producing, on a moderate sized bed, a sufficient quantity of fruit for family use, and of a quality far superior to that of either of the varieties already named. In our own experience all other kinds remained untouched so long as the Peabody could be had. The propagation of this variety has been generally, but, as we think, very unwisely abandoned. Because it failed to realize the extravagant expectations raised by its announcement, many years ago, the merits which it really possesses have been lost sight of. If any one has plants of the Peabody to spare we should be glad to be notified of the fact, as we are destitute of them at present.

NEW VARIETIES.

Of the new varieties which are pronounced promising, the following possess qualities which render it probable that they may be successfully grown at the South; and we recommend them for trial, and shall be glad to receive reports of the results from different localities.

Nicanor.

1. *Nicanor.*—This is a variety sent out from Rochester, New York. Fruit, medium, conical; color, light crimson; flesh, firm; quality, good. It gives promise of being prolific and valuable.

2. *Charles Downing.*—This strawberry originated in Kentucky, and, so far as tested, has proved productive and excellent. Its character and habit of growth indicates the ability to withstand our hot summers, but so far as we know, it has not been tested here. Fruit, medium to large; color, deep scarlet; flesh, light scarlet, moderately firm, juicy; quality, excellent.

Durand.

3. *Durand.*—This variety was originated by Mr. Durand, near Newark, N. J. It has not been widely tested, even at the North, but has so far proved very promising. It has had a partial trial in Georgia, and is pronounced so far a success.

4. *Lenning's White.*—Of all the white strawberries, so-called, this is undoubtedly the best. Fruit, large, obtuse, conical; color, almost white, with a delicate blush when exposed to the sun; quality unsurpassed, melting, rich and sweet. It is a vigorous grower, and stands our summers well so far as tried, but is only a moderate bearer.

5. *Starr.*—We have not seen this new variety, but Mr. Berckmans, (of Fruitland, near Augusta, Ga.,) speaks of it as follows: "Very large and of regular size; rather irregularly shaped; deep red; highly flavored and firm; productive, and a robust grower; quality, good. Very promising as a market variety."

Jucunda, Agriculturist, Ida, Dr. Nicaise, Napoleon III, La Constante and many other new and much lauded varieties have not proved of much value with us, the plants, in most cases, being destroyed by the heat of the summer.

Hebe Pear.

This new Southern pear promises to be an important acquisition, but has not yet been so widely tested as to determine its value for general cultivation. It is certainly worthy of a trial everywhere. It is thus described by its propagator, Mr. Wm. Summer, of Pomaria, S. C.:

"Fruit, large, specimens frequently weighing twenty-eight ounces; color, lemon-yellow, inclining to greenish, dotted all over with russet specks and deep, irregular russet blotches; stem, short, thick, and in a deep basin; form, round obovate, with irregular protuberances, similar to those of the Duchess d'Anjouleme; flesh, sprightly, melting, buttery, with a slight vinous flavor; seeds, never matured and seldom formed at all; ripens in South Carolina in December; tree, vigorous, with finely matured wood, free from thorns; shape of tree, naturally pyramidal."

Promising New Grapes.

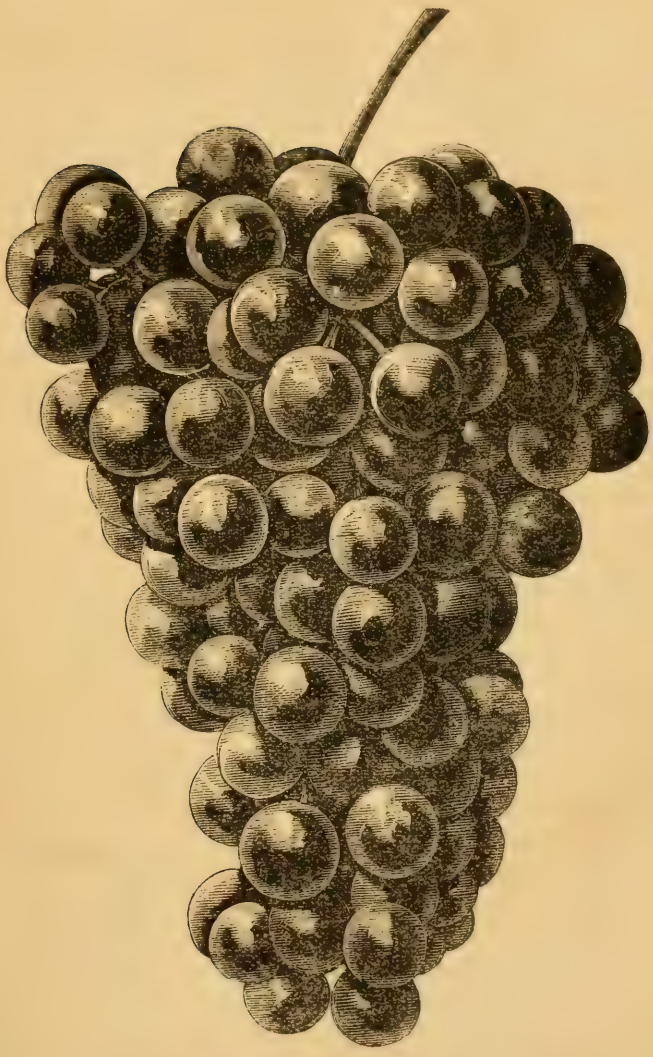
The Scuppernong, Flower's Grape, and the other varieties of the *Vitis Rotundifolia*, about which we shall have much to say in future numbers, are, undoubtedly, destined to take the leading place in Southern gardens and vineyards; the Concord, (a table and market grape,) and the Clinton, (a wine grape,) also generally succeed in our climate and are worthy of extensive propagation, but that is no reason why we should not have as many additional sorts as practicable. We can find out what sorts can be grown in any particular neighborhood or region of country only by actual experiment. The character and habits of a plant, it is true, furnish indications of its probable adaptation to a certain climate or soil, but these indications are sometimes deceptive, and this remark applies with special force to grapes and strawberries. If we desire to know whether a certain variety can be grown here with success or not, we must give it a fair trial.

Now, we by no means advise our readers to buy every new grape or strawberry that persons having plants to sell may tell them is a most wonderful acquisition, and the best in the world for all soils and climates, but when a variety has been proved to be valuable elsewhere, and its habits of growth seem to indicate its adaptation to our climate, one should be willing to take the risk of procuring a few plants for trial. It is our purpose, so soon as we can perfect our arrangements, to establish an experimental garden in which to test whatever seems to promise to be of value in the South, whether in garden, field or orchard, and to report through The Rural Carolinian the results.

Among the new grapes—new at least to us in this region—which seem to be worthy of trial here, we will name at present only the following:

NORTON'S VIRGINIA.

This fine grape, though really by no means a new variety, is little known south of Virginia, where it originated. It is a great favorite, as a wine grape, at the West and especially in Missouri. The wine made from it is conceded to be superior to the best red wines of Europe. It proves vigorous, hardy, free from disease, and productive in the West, and succeeds in almost any soil and situation, but *produces the richest wine in warm, southern aspects.* It is a small black grape, with medium compact bunches, and is sweet and rich, but only moderately juicy. It is very difficult to grow from cuttings, which is one reason why it has not been more widely propagated. We have seen a few vines of this variety growing in the South, but not in bearing. Will persons who have fruited it here please report the result through our pages?



The Cynthiana Grape.

CYNTHIANA.

This grape (known also as *Red River*) is said to have originated in Arkansas. It closely resembles Norton's Virginia in foliage and wood. The fruit is also of the same color, but somewhat larger, more juicy and sweeter. It makes a dark red wine with less astringency and a more delicate aroma than that of the Norton. It is a strong grower and productive, but, like the preceding, difficult to propagate. Mr. Samuel Miller, of Blufton, Mo., in the *Germantown Telegraph*, warns the public against spurious vines of this variety, as follows:

"Just at this time, when the above named grape is becoming known to some extent, and has proven to be a wine-grape of almost unsurpassed excellence, it may not be amiss to warn the public against getting spurious vines. Its strong resemblance to Norton's Virginia, to which it is closely allied, will give unscrupulous dealers an easy task to deceive. It has cost me considerable to secure a small lot of vines and wood for my own use from a reliable source. It is one of those varieties that are very difficult to propagate, but takes very well by grafting."

As this is a grape of Southern origin, the probabilities are in favor of its succeeding in the South generally.

MAXATAWNY.

The Maxatawny is a promising white grape. It is not hardy at the North, but at the West is considered valuable. Its character and habits seem to indicate its adaptation to the South. Though called a white grape, the fruit is of a pale, yellow color, with a slight amber tint on one side. The pulp is tender and sweet and its quality the best.

The Martha is another new grape of a color similar to the foregoing, and very promising in every way so far as known. Being a seedling of the Concord, it may prove, like its parent, adapted to all soils and climates.

RULANDER.

The Rulander is believed by some to be a true foreign grape, but is, probably, a native seedling from foreign seed. The vine is strong, vigorous and short jointed, and has heart-shaped, smooth, light green leaves. The bunch is small, compact and shouldered, and the berry small, black, without pulp, juicy, sweet and delicious. It makes a delicate, high flavored wine. This variety has been well tested in Missouri, but is little known elsewhere. Louisiana is similar to the foregoing, but the fruit has a more sprightly flavor.

We shall describe and illustrate other grapes, new and old, from time to time, and give directions for planting, pruning and training.

Rustic Gateways.

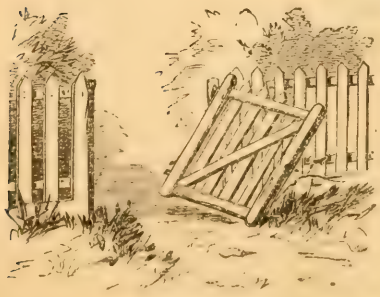


Fig. 1.

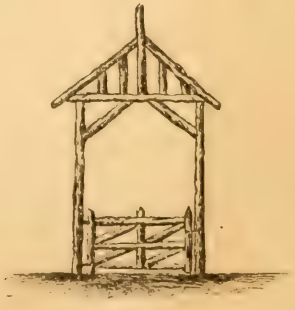


Fig. 2.

There are thousands of gates, throughout the country, somewhat in the

condition represented in figure 1. They should be replaced by serviceable structures, which may also, with but little extra expense, be made attractive. Figure 2 shows a picturesque rustic gateway, which may be very easily constructed of rough sticks of cedar or other durable wood. Any one who understands the use of the saw and the hammer can build it, and the materials may be found on every farm. Figure 3 represents a gate for a drive-way, in the same style. Neither of them require any explanation.

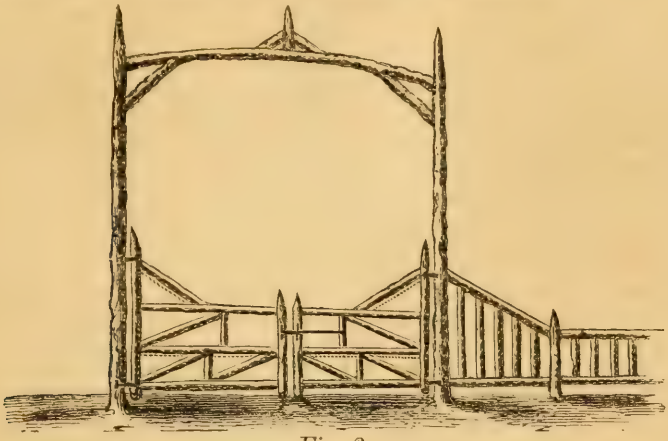


Fig. 3.

The Fig—A Suggestion.

"In the name of the Prophet, figs!" is the cry of the oriental fruit vender; and in the name of the *profit*, we ask why are we, even here in Charleston, buying the imported figs of Asia, instead of putting up not merely for our own use, but for the supply of the whole country? Our climate and soil, especially here in the low country, are just suited to the fig; it is a prolific bearer; the crop never fails; and the tree is easily propagated and requires very little attention. The fruit is excellent, preserved or put up in syrup, and the practical difficulties which have seemed to lie in the way of drying them, in the manner in which imported figs are dried, may, we are convinced, be overcome, or new and equally practicable methods devised. Who will set an example in fig-growing for profit, and thus open a new branch of industry and a fresh source of wealth for the South?

And who is sufficiently learned in this depart-

ment of pomology to give the true names, with correct descriptions of the best varieties? At present their nomenclature is very uncertain, and the descriptions which appear in books are, in the main, too inaccurate and general to be of much service.

Flower Wreaths.

The accompanying designs may furnish hints to our fair readers who are fond of wearing wreaths, coiffures and knots of flowers for the decoration of the person. In arranging flowers, strong contrasts should be avoided or softened by interposing those shades which tone down color. Scarlet and azure flowers look charming with white, but only when there is an intermingling of green to harmonize them. With black hair and costume, light flowers are very effective, but deep, rich colors harmonize better.

Tin Labels for Trees.

After many years trial, we find nothing so cheap, simple, convenient and durable as strips of sheet tin, for permanent labels on bearing fruit trees. They may be seven or eight inches long, an inch or so wide at the larger end, and tapering nearly to a point at the other. Neither the breadth nor length requires accuracy. They are cut out of scrap tin, and may be made at the rate of a dollar per thousand, or at a less cost. To write the name, lay the label on a table or board, and make the letters with the point of an awl or of a file ground to a short point, pressing firmly while writing. Each label is placed on the side limb of the tree, by bending the smaller end once or once and a half round it. The work is then done—in less time than the

reader has occupied in reading these directions. Nothing further is necessary for many years. The point used for writing the letters scrapes away the tin coating, and admits the moisture of rain to the iron, rusting it and rendering the letters conspicuous. As the limb increases in size, the tin yields to the pressure, and never cuts the bark, and is at the same time stiff enough to hold on and prevent the label being moved by the wind, which so often defaces and wears out other labels. Out of some hundreds made and put on trees about eight years ago, all are now distinctly legible and in their places, and most of them appear likely to last at least eight or ten years more. The cut is an accurate representation of one of these old labels.—*Country Gentleman.*

Philadelphia Raspberry.

So far as we are informed, this variety has not been fully tested in our climate. Three years ago we procured a few of the plants which we planted in January, side by side with some American Black Caps, in a moderately fertile sandy soil, using no manure, except vegetable mould from the woods and a small quantity of ashes. They grew luxuriantly and withstood the heat and drouth of the summer as well as the Black Caps; but as we left the place during the following winter, we did not have the pleasure of testing their productiveness or the quality of the fruit. Should it succeed well here, where the red varieties generally fail, it will prove a great acquisition. It is

a very popular market variety in some localities at the North, and succeeds admirably on the light sandy soils of New Jersey. It is a dark red berry, moderately firm, sub-acid, not rich nor juicy. We intend to give it a fair trial here.

Shall we Grow Tea?

This subject is attracting a good deal of attention at the present time, and getting discussed in the papers both North and South. Many writers express the belief that the tea plant can be successfully cultivated in the Southern States, and the hope that in the new era now dawning upon this section of the country, it will become a staple only second in importance to cotton.

Some twenty years ago, Dr. Junius Smith made the experiment of growing tea in upper South Carolina. The plants throve finely, but the conclusion arrived at, we believe, was that the high price of labor in this country would prevent a successful competition with the Chinese in this branch of industry. The New York *Tribune* says:

"We *ought* to grow tea. It is an agricultural product of a climate like a wide belt of our country, and we already know that it will flourish on our soil. Why should we persist in going around the world for what might as well be grown at our doors? The Chinese take very little of us but silver and gold, and these we cannot produce so fast as we need them to redress the the balance of trade, otherwise heavily against us. It is not probable that the Chinese or Japanese tea-grower receives one-fourth the price that our tea-drinkers pay for his herb; let us grow for ourselves, and labor will then receive seventy-five instead of twenty-five per cent. of the cost of its product to the consumer. Doubtless, there will be difficulties to overcome at the outset; but patience and experience will soon overbear them."

With the cheap Coolie labor that we are destined soon to command, we believe that tea culture will be undertaken on a large scale and be made profitable. As it is, every Southern family can easily raise its own tea, there being no difficulty at all about the cultivation. Some of our nurserymen have plants for sale, we believe. We shall have more to say on the subject in a future number, and shall present an engraving (from a photograph) of a plant grown in South Carolina.

Training Colts.—A correspondent of the *Western Rural*, gives his method of training colts as follows:

"I first halter them and put them in the stable. I curry them gently each day; place the harness on them and let them remain in the stable with it on for a few hours each day for a few days. After they have become accustomed to the harness, I place them before an empty wagon and drive them about a few hours each day for a number of consecutive days. After they are sufficiently subdued, so that I can hitch and unhitch them at will, I use them harrowing in grain, and all light work the first season."

Stock and Natural History Department.

Draft Labor.

THE MULE—THE HORSE—THE OX—STEAM.

The comparative value of the labor of the ox, the mule and the horse has afforded, for a long time, a theme for discussion. Not only able writers in books and journals have attempted, on one part or another, to determine the matter, but it has often been introduced into agricultural clubs, and even in debating societies. In theory the question remains yet undecided, while practice varies according to the tastes of individuals, or their circumstances or their pride.

Nothing new can well be advanced at this period of the lengthened controversy, yet a summary of the advantages and drawbacks of the kinds of draft labor in general use among mankind, presented in one view, may conduce to some public benefit.

In the earliest ages of which we have any record, the ox and the ass were domesticated—were employed in all the menial work of the patriarchal family, and in unison with the Divine command, "thou shalt not covet thy neighbor's ox nor his ass," formed important items in the schedule of pastoral wealth. The origin of the former is buried in the mists of ante-historical times; the latter was reduced from his wild state in the deserts of Arabia and in the mountains of Tartary. It was a law of Moses that one should not "muzzle the mouth of the ox that treadeth out the corn," and Issachar was compared to the "strong ass crouching down between two burdens." While the ox continued to plod at the plow and the wain, the ass was elevated to the higher care of his master as the bearer of his person, and in the stable economy of King David an officer of high rank and dignity was detailed expressly to superintend the stud of well-bred asses. Declining from his eminence of being fleeter on his native heather than the horse or even the antelope, as the proud supporter of the dignity of kings and princes, and at a later period of supplying the dainty flesh most relished by the epicures of Rome, he became the symbol of humility on which our Lord was borne into the holy City of Jerusalem.

Supplanted by the horse and by his own progeny, the mule, succeeding generations of subjection to ill usage, exposure to the rigors of every climate, to hard labor, poor fare, kicks and blows, the ass became indifferent to punishment, stubborn in temper, spiritless and stupid, yet still active, sure-footed on declivities where the horse would not dare to venture, and patient even to the

extremest gentleness under heavy burdens and constant toil. He is still employed in many countries in the humblest and the severest duties.

In remote times the mule sprang from the ass, and was often found wild. Aristotle alludes to a chariot race in the Olympic games, in which mules called *hemionos*, half ass, participated. The equipages of distinguished Roman ladies were drawn by them. The baggage of the Roman armies was transported by them. Nero shod his mules with gold and silver, not with mere plates, but the entire hoofs were enclosed in the precious metals. A Roman senator paid $13,000 for an ass with which to propagate the mule, which was equalled at a much later period in Spain, where too the mule has long been, and is still, used for the saddle and the coach by the ladies and the dignitaries of the land, the grandees and the sovereign. Pliny speaks of a mule at Athens being eighty years old. There were two in England mentioned as seventy years old. Some years ago one twenty-five years old frequently drew a ton's weight in a wagon into Boston, a distance of five miles. Lafayette sent as a valuable present to Washington the first Maltese jack imported into the United States for the purpose of breeding mules. The mule is everywhere prized in his varied capacities for affording pleasure and yielding profit. Like his progenitor he is active, stronger from his larger size, is sure-footed, tractable, longer-lived than the horse, hardier, freer from disease, more cheaply fed, easier kept in condition, better for a long, steady pull in harness; but he is very homely, especially about the head, his voice is hideous to ears attuned to dulcet symphonies, and he is treacherous, obstinate by inheritance, a bad jumper of fences, sagacious in escaping from enclosures and encroaching on growing crops. Associated for a long season with the negro, the bad qualities of each are assimilated, leaving it in doubt whether the influence of the action of the one was greater than the reaction of the other; in their evil ways and evil tendencies *arcades ambo et cantare pares et respondere parati.*

The horse, of all domesticated animals the most graceful of form and the most majestic of bearing, has been so long in the employment of man that the country of his origin is unknown. Joseph went up from Egypt to bury his father "with chariots and horsemen." Miriam, the prophetess, said "sing of the horse and his rider thrown into the sea." Job wrote, "his neck is clothed with thunder, he smelleth the battle afar off, he swalloweth the ground with fierceness and rage, he mocketh at fear, neither turneth he back from the sword." He ran in the Olympian chariot races 1650 years before the Christian era. He was used in war chariots in all the East and by the Britons in opposing the invasion of Cæsar. He was the charger—like Bucephalus—conducting to victory the heroes and demi-gods of olden times. Without him the brilliant deeds of arms of all ages would have been shorn of their lustre. Hannibal, who won his battles mainly with the cavalry arm, would not have attained the *status* as one of the three greatest generals of the world; and Du Guesclin and Bayard would have failed to achieve their immortal renown. The fabled Centaur may represent his transcendent worth, the union of guiding reason with docile muscular strength, which swept over

the earth and advanced by centuries what otherwise would have been the slow progress of the race, for the collisions of nations, their redeeming feature, kindle thought and develop ideas. Until the feudal system was established in Europe, the horse, as he is this day to the Arab, was the companion and the pride of king and noble, of knight and squire—the monarch and the idol above all domestic animals. At this period he was deposed from his lofty pedestal and subjected to the drudgery of husbandry. The feudal lords were obliged to supply horses for active service in their frequent wars, but when at peace these were idle and expensive. To contribute to his maintenance the horse was put to the wagon and the plow. His adaptation to agriculture led to his more extensive breeding for the purposes of both the battle-field and the farm. Ere long he was mingled in the common herd of productive beasts, and at this day we find him appropriated to the services which were formerly required exclusively of the ass, the ox and the mule.

He is more sagacious than these; docile and affectionate in disposition; strong, active, spirited, courageous, but not so sure at a dead strain; liable to many diseases; is, comparatively, tender of climatic exposures; demands more care and attention; is shorter-lived, deteriorating more after ten years than a mule does after twenty—at ten years losing fifty per cent. of what his value was at six years—and largely expensive above all the others. If properly fed, he will eat each year about what he is worth. Ten acres in corn on our average land would not suffice for his provender. His average of life is so short, that his mortality is another serious item in the cost of keeping him. With us he is an expensive luxury; alive, consuming our substance, and dead, offering only his hide for saddle skirts or seats, and his carcass—this is of some value—to our manure heaps. His possession should be restricted to the rich, for uses of the saddle and the carriage, and his place in all farming operations be filled by the ox and the mule.

While the ox has not been altogether neglected among us, he certainly has not been fully applied to all the services to which his nature adapts him. He can be broke to the yoke at two years old, and freer from disease than other work animals, lives and works to fourteen or fifteen years. His harness costs a mere trifle, and rarely needs renewing or repairing during his entire term of labor. He is not a great deal slower in the plow than the mule, gaining at each turn of the row what he may lose on the stretch. He is the steadiest of all at the draft. He is perfectly docile, and has been used in the plow, wagon, cart, buggy, and even under the saddle. For breaking fallow lands he is unequalled, and strung in lines of three to eight yokes, he has torn up the prairie turf to a thoroughness and satisfaction that mules or horses could not approach. His food costs almost nothing compared with the others. He consumes the offal of the farm—the rotten corn, the wheat straw—fattens on shucks, and turned from his yoke at night to good pasture, he is fresh in the morning and ready again for the day's work. He is impatient of very hot weather, but it is easy to humor him in this. Work him from day dawn to eleven o'clock—rest four hours or more and resume the

task. He will thus make about as many hours per day as the mule or horse. He is headstrong in the rush to quench his thirst after long abstinence. Indulge him. He drinks more than the others, but does not require it oftener than four times a day, which every prudent farmer allows to all his work animals. Differing from the others, when his term of service ends at ten to fifteen years, as you may please, he may be pastured or stall-fed, and his flesh makes, then, the universal favorite of all our meats. His skin supplies leather for shoes, harness, bands—indeed, for a hundred indispensable purposes. His fat makes soap and candles, his horns and bones our combs, knife and other handles, substitutes for ivory, etc., and his feet our material for glue, and the neat-foot, one of the best of our lubricating oils. Even his blood is brought into requisition in the preparation of Prussian blue. His companion, the cow, capable, and so applied in some countries, of similar services in all respects, gives, additionally, our milk, cream, butter and cheese. For economy, safety and comfort in the most of our agricultural operations, we would not hesitate to yield our preference to man's first servant, the patient, efficient, and though often much abused, yet ever faithful Ox.

All these modes of draft, these motive powers, however, are destined to be superseded, in a great degree, in some operations entirely, by the application of steam, condensed air, and possibly by electricity, as substitutes for the living muscle. Already the steam-plow of Fowler & Co. has achieved eminent success in Great Britain and Egypt, and been partially introduced into this country; and Thompson's road steamer has been tested with high promise of general adoption. To say nothing of the steam horse or man, of New Jersey, which moved, it has been said, with a ton's weight over hill and dale, with the speed of half a mile a minute—even if a fiction at the present moment, is yet a prolific thought, and, no doubt, to be realized in the early future. The expense attending these machines is, just now, altogether too great for their common use. They must first be employed by clubs, and when simplified and cheapened, as they surely will be, they will eventually come into universal practice. What a revolution will then be consummated! What a stupendous vista does its contemplation open to the progress of agriculture.

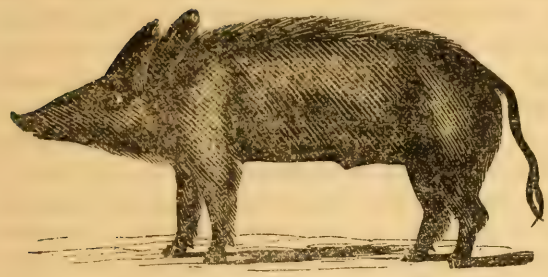
M. C. M. HAMMOND.

Beech Island, S. C.

Food for Chickens.—A writer recommends for chickens, for the first week after hatching, hard boiled eggs, to be given, chopped fine, at least twice a day, wheat steeped in milk, and coarse Indian meal, bread crumbs, etc. A change of food is necessary twice a week, substituting cracked corn for wheat.

The Preservation of Eggs.—A writer in the *Farm and Fireside* recommends the dissolving of gum shellac in alcohol, when the mixture may be applied with a common paint-brush. When dry, pack in bran, points downward. Eggs so preserved will keep a very long time. When about to be used the varnish may be washed off.

About Hogs--The Best Breeds.



The Land Pike Hog.

We herewith present to our farming readers several portraits of noted porkers. The first, we think, most of them will recognize as an old acquaintance, though they may know him by a different name from the one by which we introduce him. He has his good qualities. At travelling he can hardly be beaten, except by a thorough-bred race-horse. In rooting he is equal to the best mole plow. He cannot be starved when there is any forage to be had anywhere. He will live in the swamp all winter, and come out improved in his speed if not in his "bottom." He is not easily caught—not he—and, therefore, is less likely to be confiscated by the hungry freedmen. If you want a hog to run in the woods and make his own living—a hog that no fence can stop, a hog that will rove, root and plunder, kill chickens and fight dogs, this rough, big-boned, thin-backed, slab-sided, long-legged and long-nosed fellow is just the thing you are looking for, and you need not look far; but if you wish to make pork, and make pork pay, the more of these land pikes you have the worse off you are.

We advise our readers to keep this picture carefully, for we hope and believe that the time is not distant when we shall have no living specimens of the breed, and the land pike will live only in history. We have here contributed our mite towards this history.

The breeds of hogs are somewhat numerous. It is not our purpose to describe them all here, but to call attention to one or two desirable ones—perhaps the most desirable.

I.—THE ESSEX BREED.

The Essex Hog.

The Essex hogs are black and white, the black prevailing; in fact the purest and most esteemed are entirely black, and are distinguished by having small teat-like appendages of the skin, depending from the under part of the neck. They have large bodies and small heads; long, thin, upright ears; a fine skin; good hindquarters; and a deep, round body. They are small boned, and their flesh has a fine flavor. They are hardy, mature early and can be fattened at any age. Notwithstanding the blackness of their bristles, they are perfectly white when dressed. A correspondent of the *Southern Cultivator* describes his experience with this breed as follows:

"In April, 1867, I got a pair of the Essex pigs, and had them sent home to me at four or five weeks old, before they were weaned. They were put in our yard, and raised principally from the kitchen and the garden. Soon after I got them home, I turned into the yard with them three other pigs of our common stock, of about the same age, size and condition. The five were then kept together with precisely the same treatment in every respect.

"It would be difficult to imagine a better opportunity to test with fairness and accuracy the relative value and merits of two different litters of pigs, than was had and done with these. The result was that while the Essex attracted universal attention and elicited praise and admiration from all who saw them, the others were entirely overlooked, or referred to only by way of comparison, and as illustrating the superiority of their more favored and fortunate rivals. This is no ideal or fancy sketch, as a number of good and responsible men would testify if called upon. The superiority of the Essex over our common stock, so far as I have tried them, consists in their industry, their thrift, their beauty of form and their facility of fattening and acquiring flesh.

"It is but just that I should say that their treatment at no time was up to the standard of good, either in quantity, quality or preparation of their food. They only received such treatment as any family would give or try to give to a lot of pigs taken into the yard to be raised, and where the chief dependence was upon the slops and garbage from the kitchen and garden. My object being to make a fair test of their merits and their value as stock hogs, I treated them as such, both as pigs while in the yard with other pigs, and as hogs since they were turned out with the other stock. No preference or advantage has at any time been given them over the others."

II.—THE CHESTER WHITE BREED.

Chester County White Hog.

The genuine Chester is a pure white, long body and square built, with small, fine bone, and will produce a greater weight of pork, for the amount of food consumed, than any other breed yet tried among us. A very important characteristic of the breed is, that it will *readily fatten at any age.* Many hogs, it is well known, will not fatten while they are growing, or until they have reached their full size.

The average weight of the Chester stock, at sixteen months old, is from 500 to 600 lbs., and when kept till two years old, they frequently run up to 700 and 800 lbs. Our spring pigs, when killed the following fall, weigh from 300 to 400 lbs., which is considered the most desirable weight for pork—producing hams of a more salable size and better quality. As a general rule, our farmers do not care to have their hogs weigh over 350 to 400 lbs. To reach this weight at nine months old, our hogs, of course, must be well fed. The Chester is not different from other stock in this respect—to thrive well, it must be well taken care of.

We are convinced that where hogs are to be penned, fed and well cared for in every way from the start, that the Chester whites are far superior to all other breeds. The Essex will, perhaps, stand rough treatment and neglect better, but they will require more food to make the same amount of pork—at least such is our impression from observation and experience.

Crevecœur Fowls.

Our cuts are from drawings from life of imported fowls, and are good representations of this new French breed. They are thus described:

"Plumage, brilliant black, sometimes a little golden or silver tinged; a large and beautiful crest; large two-horned comb, sometimes toothed; close and thick beard, and handsome pendant wattles of a brilliant red color. The neck is of medium length, well arched, and covered with a very thick glossy hackle. The legs are black or slate color, short and free from feathers. The thighs are large and fleshy, supporting a long and square body, with a broad, full breast, and rather large, closely set wings; the tail is full and well sickled, altogether giving them a very upright, handsome carriage. They are very tame, ramble but little, and seem better contented at home than wandering afar off. They are great layers, eggs are very large, and they continue laying a long time. They mature very early, and are fit for the table at three and four months old; frequently weighing six and a half pounds when well fatted. Non-sitters."

We have before us an account of seven hens of this breed that laid in nine months 1,375 eggs—an average of almost 200 eggs per hen.

The Best Fowls for Profit.

Scarcely two breeders will agree as to what breed is best. Persons desirous of raising or breeding poultry on a large or even on a small scale, will do well to test the various breeds before coming to the conclusion, definitely, which are the best fowls, everything considered, to breed with profit, as a breed which proves best with one person is not necessarily the best for another, whose mode of keeping and feeding are different. A writer in the *Rural New Yorker* gives his opinion and experience as follows:

"Our experience has been, that for market and laying purposes, the two best varieties are the Dorkings and Polands—the flesh of the former being, to our mind, sweeter, richer and more buttery to the taste than any other breed, while the quality of the latter as layers cannot for a moment be questioned. It is true, the Dorkings cannot be bred to the size of Asiatic fowls, or even the Crevecœurs; still, when the Dorkings are fattened and dressed for the table, their fine, plump, golden carcasses attract the eyes of the epicure, and command a good price in the market.

"It is a well established fact that the Dorkings and Polands are perfectly hardy fowls, and easy keepers—therefore they need no experimenting with. On the other hand, the fowls which have been so lately introduced to the notice of breeders in this country, and of which such great stories are told, have got to be acclimatized and their qualities thoroughly tested before they can be depended upon. We concede they are a fine fowl to look at, if we go for looks merely; still we *do not* concede their supremacy over the black, white-capped, Golden or Silver Polands for beauty of plumage; and then where is there a finer, trimmer looking fowl to look upon than the White or Gray Dorking? The Silver Pheasant is also a fine looking fowl, and is a prolific layer, but we would not recommend its being kept upon a small place, because of its predisposition to roam. It is, however, a fine bird. The Bolton Grays are also conceded to be fine fowls."

Of course, if two kinds are to be kept, separate houses and yards must be provided. The Dorkings and Bolton Grays have been favorites with us.

Department of Labor and Immigration.

Immigration.

There is, perhaps, no question at present agitating the mind of the Southern people that involves so much of material interest as the great question of labor. In it all classes are concerned; but the agriculturist more, perhaps, than any other, inasmuch as more labor is required in his department than in most of the other industries. A large proportion of that labor, once so effective, is no longer available for producing, while it requires as much or more for its consumption. The eyes of the people interested are, therefore, turning in every direction for the purpose of ascertaining some way, or devising some means to make the supply adequate, if possible, to the present demand, and the almost universal verdict is, that it is alone to be secured by the introduction of laborers from abroad. Hence, attention has been directed to the overcrowded population of Europe and Asia, and various schemes have been set on foot for the purpose of securing the proposed end. Among those attempted in South Carolina, that which has presented the greatest visible results is the effort of the Immigration Society of Newberry, which was organized some eighteen months ago by a few of our public spirited citizens, and has introduced into the upper portions of the State already nearly 300 continental Europeans, most of them being the fair-haired sons of the "fatherland." We are sure it will not be regarded a breach of courtesy to open to the public view some items which may not be uninteresting to the agricultural community generally, and will, doubtless, contribute to the information of those who are casting about them with a view to arranging for laborers for the ensuing year. And we may premise by remarking that the gentlemen organizing the Immigration Society were prompted not by the now prevailing incentive of gathering spoil, but alone with the patriotic motive of benefiting the country, by introducing reliable laborers who would become also good citizens. Up to the late meeting of the South Carolina Agricultural Convention, this organization operated alone as a District Society, but by the action of that Convention it has now become the Central Immigration Society of the State, and proposes to operate for the benefit of all those parts of the State which may call its services into requisition. Arrangements have been effected for the transportation of immigrants from New York to the upper portions of the State, on the best possible terms which could be procured, by which the cost has been brought down to about twenty dollars for each adult, and proportionately less for children. They have looked almost entirely to the Immigration Bureau at Castle Garden, New York, for their supply of laborers, inasmuch as it thereby involved a much smaller outlay to the employer than were they to be brought at his expense directly from Europe, while it secures also the same end. It meets

the new comer immediately as he lands from the emigrant ship, and proffers him constant employment at ten dollars per month—if his funds are exhausted, advances him a sufficient amount to defray his travelling expenses, and delivers him to his employer at the point of his destination, who deducts from his year's work the amount he has advanced to the Society, in order to secure the services of the laborer. For this service the Society receives from the employer a fee barely sufficient to cover its incidental expenses.

The experience of a little more than twelve months with this class of immigrants, has developed the fact that the employment of whole families gives the most permanent laborers. They are disposed to be contented and remain stationary, while single laborers are unsettled and roving; and where a number are gathered into a community upon neighboring farms they are generally satisfied, and give satisfaction to their employers. Not *all* that have been brought in have given satisfaction—it would have been strange if it had been so—but a far greater percentage than we had any right to expect, taking all the circumstances into consideration. Our impression is that the agent's books show that from seventy to eighty per cent. have proven to be good laborers, and, in most instances of failure, it has resulted from a want of understanding the proper management of white labor.

F. W. Brüggemann, an intelligent native German, has received the appointment of general agent of the Society, and gives himself to the promotion of the mutual interests of the employer and the employee, doing everything he can to render the laborer contented with his new home.

The business season for Southern immigration is now about to open. We can induce no laborers to come during the summer, nor would it be prudent to bring them into our hot climate at this time, but from November to March, the very time at which the Southern farmer makes his annual arrangements for labor, there is little or no demand in the Northern market, and then they can be induced to come among us. But the supply is never equal to the demand, and those who design employing this class of labor the ensuing year had better take time by the forelock, and send on their orders to the Society in good time, as the agent will leave the State to enter upon his work of engaging laborers at Castle Garden early in November; and the rule will be, "first come, first served."

The writer, with an experience of two years in the employment of German laborers—partly procured through this Society—feels no disposition to change; they prove to be obedient and tractible, and soon adapt themselves to their new habits of work and life. But they are not the laborers for the old system of South Carolina farming, which prized more highly the quantity of land cultivated than the quality of both the land and culture; and we would suggest to those of our farming friends, whose purpose it is still to pursue this suicidal policy, that they will scarcely be pleased with European laborers, and will succeed better with those "*to the manor born!*" While those whose motto is "onward" in the march of agricultural improvement, will succeed best with these who have at home been accustomed to enrich highly and cultivate thoroughly.

T. S. BOINEST.

Department of Mining and the Mechanic Arts.

The Charleston Phosphates.

That singular deposit, known as the Charleston Phosphate Bed, possesses an interest to the geologist and the scientific inquirer which few others can claim, there being nothing exactly like it, so far as known, anywhere else on the globe. It is very superficial in its position, and, in the geological sense of the words, of very recent origin. The nearest approach to it, according to Professor Agassiz, exists in the pampas of South America, where there are deposits of very recent geological formation, which have been known to scientific men for half a century, and which contain an immense amount of fossil remains. Professor Agassiz says:

"These deposits are so full of these bones that if they had become decomposed they would have formed phosphate of lime similar to this South Carolina deposit. A few bones are found in this phosphate of lime, which are the bones of extinct animals, also, and I should not be surprised if the progress of discovery should show that the phosphate of lime bed in South Carolina is equivalent to those of South America, and that the phosphate itself is the result of the decomposed bones, which, in South America, are preserved, to give us an idea of what were the animals of those times. That is all I can surmise concerning the origin of that vast deposit, and there is such a similarity between the superficial deposits of South America and North America, that I think this is probable."

Be this as it may, we have undoubtedly right here, at our very doors, one of the most wonderful deposits of the remains of extinct animals in the world—an "immense palæontological museum," as some one has aptly called it. A late writer says:

"There are whole acres thickly studded with fossils. Among these, bones have been recognized of the mammoth, mastodon, megatherium, mylodon, megalonyx, phocodon, several varieties of the sauri, teeth and bones of the shark, and numerous other fishes in great variety; also teeth and bones of the horse, dog, sheep, ox and hog, differing little, if at all, from those belonging to our present domestic animals. Pieces of pottery, also, have been found, with stone hatchets, arrow heads, and other implements of human skill, all in this same bed, almost identical in their character with similar remains found some years ago near Abbeville in France. There have also been found one or two human bones.

"This strange collection, this miniature sepulchre of the ages—where animals extinct sleep side by side with others, the ancestors perhaps of our daily companions—where men, beasts, reptiles, and fishes, would seem to have found a common grave."

But, interesting as these deposits are in their scientific and speculative aspects, it is to their commercial value and their probable influence upon the

future of our city and State that we desire at present more particularly to call attention. It is more to our purpose to show that we have here the means of renovating all the poor, worn out lands of South Carolina, and adding hundreds of millions to the wealth of the State, than to wax eloquent over immense shark's teeth, gigantic vertebræ, and ponderous maxillaries. It is with the phosphate rocks, or nodules, rather than with the bones, that we have to do at present.

The existence of the phosphate rocks, now found susceptible of being transmuted—not directly into gold, but into cotton and corn, and thus into greenbacks—has been known, not only to the planters who turned them over with their plows, and the cultivation of whose fields they obstructed, but also to men of science, for a hundred years at least. They are found piled up on lawns, on the borders of cultivated fields, and by the roadside, as something to be got rid of in the easiest possible way. Their real worth was not, until within the past few years, even suspected. It has been long known, however, that the marls existing in the vicinity of Charleston are very valuable as fertilizers, and that they contain from six to fifteen per cent. of phosphate of lime. It was the working of these marl beds which led indirectly to an appreciation of the value of the phosphate rocks.

The want, then, of a cheap fertilizer, the consequent continued interest felt in the Ashley marls, and the investigations set on foot by parties interested in procuring an available basis for the manufacture of a concentrated manure, seem to have led, step by step, to a discovery of the value of the phosphate rocks; but the proximate cause, singularly enough, was the reading of a little book, "Ansted's Lectures on Practical Geology," in which it is stated that there are vast deposits of phosphate rocks in the vicinity of London, just as there are in the vicinity of Charleston, and, moreover, that these rocks near London—nearly identical in composition and in surroundings with those near Charleston—were being turned into a valuable fertilizer. This opened the eyes of scientific men here to the economic value of our phospate rocks and led to their careful analysis, by which it was shown that they contain from fifty to seventy per cent. of phosphate of lime and from six to seven per cent. of organic matter.

The limits of the great phosphate bed of the Charleston basin have not been exactly defined, but it is certain that it is very extensive, some estimating its area at thirty square miles. It crops out on the banks of the Ashley, Ashepoo and Combahee Rivers, but is developed most heavily on the first named. The stratum varies in thickness from six to sixteen inches, and occupies a nearly horizontal position, protruding at the margins of the rivers and lying deeper as the land rises. In some places the nodules are packed very closely, and in others they are more sparsely distributed. The rocks or nodules vary in size, from that of a hickory nut to a foot or more in diameter, and are of every conceivable irregular shape, though bearing a general resemblance to each other. They are evidently water-worn and are perforated with holes of various sizes. Figure 1, in the following wood cut, will

*Fossils and Phosphate Rocks.**

give the reader a tolerably correct idea of their appearance. A fresh fracture in any one of them discloses the forms of shells and bones, similar to those found in the marl beds below, and emits a fetid odor. The yield of these rocks is from five hundred to one thousand tons per acre, which would give twenty millions of tons at least as the probable yield of the whole bed. Bones, teeth and other animal remains are occasionally thrown out. The mining operations consist ordinarily (though they differ somewhat at different mines) in a regular trenching of the ground to the required depth and the loosening with a pick of the embedded nodules, which are then thrown out and transferred to wheelbarrows, to be deposited in large heaps. Here they are left to dry and then are carried to the washing mill, where, by means of ingenious machinery driven by steam power, they are thoroughly cleansed and thrown out upon a platform, or directly into a car, in a condition for shipment.

Of the agricultural and commercial value of the Charleston phosphates there has never been any grounds for doubt. They are just what our planters and farmers need, and just what they have been paying Northern manufacturers good round prices for, often in a badly adulterated condition too. They are, in fact, true bone, and have a composition almost identical with recent bone deprived of most of its organic matter. "The material is not, then, a mineral phosphate, but in its crude state, when ground fine, can be relied on as equal to calcined bone in fertilizing power, or even superior to it, since it still contains from six to seven per cent. of organic animal matter containing nitrogen, equivalent to at least one-half of one per cent. of ammonia. An unusually high grade of superphosphate can be made from these phosphates, as they contain little or none of those ingredients common in phosphatic

*From a photograph of specimens taken from the mines of the Wando Mining and Manufacturing Company, on the Ashley River. 1. Phosphate Rocks; 2. Vertebræ of Fishes; 3. Jaw Bone of a Crocodile; 4. A Shark's Tooth; 5. A large Tusk; 6. A Bone.

guanos, which render them difficult to manufacture and injurious to vegetation." The raw phosphate is worth, at a rough estimate, ten dollars a ton at the works.

There are already numerous companies and individuals engaged in working phosphate beds.

1. The Charleston Phosphate Mining and Manufacturing Company, with a capital of $100,000, with the privilege of increasing it to $1,000,000, owns extensive phosphate lands on both sides of the Ashley River. It has heretofore, we believe, confined its operations to mining and shipping the rocks to Philadelphia. Jesse E. Smith, Philadelphia, President; Colonel Joseph A. Yates, Charleston, Superintendent; B. S. Rhett & Son, Charleston, Agents.

Wando Phosphate Mines on Ashley River.

2. The Wando Mining and Manufacturing Company is working a fine bed on the Ashley River, about nine miles from the city. The rock is shipped to Charleston, where it is manufactured into the well known and popular "Wando Fertilizer." The capital of this company is $100,000, with the privilege of increasing it to $500,000. John R. Dukes, President; Thos. D. Dotterer, Superintendent; Wm. C. Dukes & Co., General Agents.

3. The Ashley Phosphate Mining Company is operating on the celebrated Middleton estate, on the Ashley River, about eighteen miles above Charleston.

The material is here imbedded in pipe clay, and is uncommonly rich in phosphate of lime. A very effective washing apparatus, built by J. M. Eason & Brother, has lately been erected at the mines. We hope to give a view of the works in a future number. Chas. C. Baker, of Baltimore, President; Williams Middleton, Agent; J. N. Lawton, Superintendent.

Sulphuric Acid and Superphosphate Works on Cooper River.

4. The Sulphuric Acid and Superphosphate Company, making its own acid and using the native phosphate as a basis, is manufacturing superphosphates of high grades, under the names of Etiwan No. 1 and Etiwan No. 2, the first being guaranteed to contain from eighteen to twenty-four per cent. of soluble phosphate of lime, and the second from eighteen to twenty-four per cent., with from one and a half to three per cent. of ammonia. Etiwan No. 1 is particularly recommended for root crops, and for cotton and all crops planted on *dark or loamy* soils. The works of this company are on the Cooper River, about four miles from the city. Capital $200,000. Hon. C. G. Memminger, President; Dr. N. A. Pratt, Superintendent; Messrs. Wm. C. Bee & Co., Agents.

5. The Pacific Guano Company, with a capital of $1,000,000, partly represented by Charleston capitalists, has very complete and extensive works just beyond the city limits. Dr. St. Julien Ravenel, well known for his high scientific attainments, is the chemist and scientific adviser of the company. The fertilizer sent out by this company is known as Soluble Pacific Guano. Charleston Phosphates are used in its manufacture. John S. Reese, General Agent, Baltimore, Md.; J. N. Robson, Agent for South Carolina.

6. An Augusta (Ga.) company is mining on the line of the Northeastern Railway, about ten miles from the city.

There are also other companies, firms and individuals engaged more or less extensively in the business, but we have not been able to obtain trustworthy and accurate information concerning them in time for publication in this number.

Sorghum Sugar.

Mr. EDITOR: A few months ago I was invited by Mr. Wilhelm to accompany two gentlemen from Newberry, then on their way to the Sorghum Works, some two miles distant from the City of Greenville. I accepted the invitation, and was more than gratified by the result of the experiments made. On our arrival at the place, a barrel of syrup, said by the maker to be first-rate, was broached, and three bucketsful poured into a trough, and three buckets of water to one of syrup added and thoroughly stirred. While this was being done, a fire was kindled under a furnace containing two cast-iron pans, about five by two and a half feet and one and a half to two inches deep, the two being connected by a small flood-gate. The liquid in the wooden trough was passed through a swing pipe to prevent the sediments from escaping into the pan in front, and was soon boiling, when the skimming took place; then it was introduced into the second pan, where it was again skimmed, thence through a tube and a strainer to a second trough. A fire having been started in the second furnace, the liquid passed into the third pan, which is larger than the first two, and received the finishing touch, when it emptied itself into vessels, genuine and pure syrup. It is, undoubtedly, the most simple, clean, neat and speedy operation of boiling I have ever seen. There is no complication about the matter. Each pan contains twelve or fifteen gallons, and in fifteen minutes the thing is done. The streams are constantly flowing, and it requires but a little while for a common hand to learn the art of boiling. The most astonishing thing to me, was the amount of impure matter extracted from syrup which had been pronounced by the maker "splendid." The bottom of the trough where the syrup and water were mixed, was covered with sediment resembling green mud. The syrup made from this impure and black mixture resembled the brightest Orleans syrup, and was devoid of the usual sorghum flavor.

Having satisfied ourselves with the sight of syrup-making, we were invited into an adjoining room to witness the sugar manufacture. Mr. Wilhelm took a bucket to a trough containing something like dirty mush, with which he filled it up one-third, and the remaining two-thirds with water, stirring it thoroughly. Two little boys commenced turning the crank of the centrifugal mill, when the contents of the bucket were poured on the top of the cone, revolving at a rapid rate of speed, and in a few seconds the cone was removed from its bed, and a beautiful article of dry sugar scraped from the side. The same sugar was mixed with water and run through the mill, increasing its flavor and whiteness. While these experiments were going on, I involuntarily exclaimed, "what a blessing for the South!"

Any one who has seen the making of syrup, or been engaged in it, will give up the business before he will consent to use the old-fashioned drip boilers. I inquired the price of the pans, etc., and was told that one complete set of

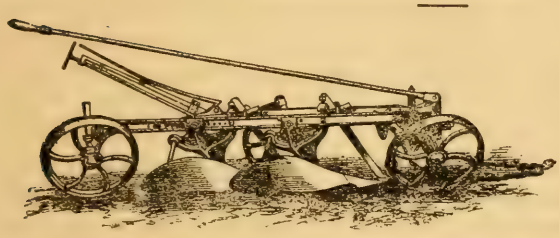
evaporators; two furnaces, all iron, complete; swinging pipes, etc., could be procured for $175, from Mr. John Alexander, of Columbia. There is no humbug about the matter—the public have only to see the thing to believe in it. It will pay better than cotton or anything else. If any one feels interested in the business, he can obtain full particulars by addressing Dr. W. P. Passmore, at Greenville, S. C.

I should like to have been more minute in describing the process as it advances, but I have spun out my letter too long, and have said, as I think, enough to induce those who desire to make sugar or syrup to investigate for themselves.

ROBERT McKAY.

Greenville, S. C.

An English Double-Furrow Plow.



This new implement is intended to save draft, and by turning two furrows at once, one man, and either two or three horses, according to the nature of the soil, can do as much work as two plows of the best ordinary description. The construction of the plow is different from any other; the land side and slade being entirely dispensed with, and two wheels substituted. These wheels run at such an angle, and are so shaped, that the whole of the thrust caused by lifting and turning the furrow is taken on them, and thus a rolling friction is substituted for a dragging friction, and the draft, it is claimed, is diminished by at least thirty per cent.

The front and back wheels shown on the engraving run at an angle in the bottom of the furrow. The left side of the plow is carried by a wheel fixed to the lever shown in the engraving; this wheel runs on the unplowed land, and may be arranged as a castor, thus giving great facility in turning the plow at the headland. The lever also serves the purpose of disengaging the plow from its work at the end of the field, as by lifting it up till the catch shown on it comes into play, the shares are so raised that they draw themselves out of work and clear the plow from the furrow. The depth of the work is regulated by the T handle shown on this lever. On the other end of the rod, connected with this handle, is a screw, by which the man can adjust the depth without stopping the plow. The long handle shown in the engraving is fixed to the axle of the front wheel in such a manner that the plow may be steered and turned with the greatest ease.

ENGAGE not hastily, as a party, in a difference between others, but reserve thyself impartial and unengaged, that thou mayst moderate between them.

Greasing Wagons.—Few people fully appreciate the importance of thoroughly lubricating the axles, etc., of wagons and carriages, and still fewer know what are the best materials and the best methods of applying them. A well-made wheel will endure common wear from ten to twenty-five years, if care is taken to use the right kind and proper amount of grease; but if this matter is not attended to, they will be used up in five or six years. Lard should never be used on a wagon, for it will penetrate the hub, and work its way out around the tenons of the spokes, and spoil the wheel. Tallow is the best lubricator for wooden axle-trees, and castor-oil for iron. Just grease enough should be applied to the spindle of a wagon to give it a light coating; this is better than more, for the surplus put on will work out at the ends, and be forced by the shoulder-bands and nut-washers into the hub around the outside of the boxes. To oil an axle-tree, first wipe the spindle clean with a cloth wet with spirits of turpentine, and then apply a few drops of castor-oil near the shoulders and end. One teaspoonful is sufficient for the whole.

Commodore Maury on the Coolies.—Commodore M. F. Maury, in reply to a letter addressed to him by G. W. Gift, Esq., of Memphis, Tenn., thus speaks of the Chinese and their value as laborers:

"Chinese labor is much more intelligent, skilful and effective than negro labor, and I consider the introduction of it, under proper regulations, would be highly beneficial to the South.

"After Jamaica, Trinidad is the largest of the British West India Islands, and that it did not pine and dwindle as Jamaica has done, is, I am assured by residents there, chiefly owing to the introduction of Coolie labor.

"Kindly and properly treated, the Chinese are the most faithful creatures in the world. I have been in the country, and have paid some attention to their traits of character. As domestics and laborers, gardeners and cultivators of the soil generally, they are not surpassed by any other people. From the first that arrive, I should like to have a cook and two house servants. Please let me know how to proceed in order to procure good ones."

Land and Labor.—There are hundreds of thousands of acres of good land in South Carolina which have hardly a market value. The fences are rotting, the fields are choking up with weeds, scrub oaks or pines are taking the place of the fleecy cotton or golden corn. There is no demand for these lands, and they cannot be worked because we have not the laborers, or, perhaps, the ready money for wages and supplies. Land is the one thing that we have in abundance. Labor is the only thing that will make our land valuable. Land, then, of which we have too much, must be made to procure labor, of which we have not enough. The value of land is in proportion to the population. As population increases the land rises in price, and it is not too much to say that to double the white laboring population of South Carolina would be to treble or quadruple the value of the land. This will hardly be denied, and the whole proposition resolves itself into this: Are the people willing to give away to actual white settlers a portion of their lands, having the certainty that the remainder will, in a year or two, be worth more in actual money than the whole tract is worth now?—*Charleston Daily News.*

THE RURAL CAROLINIAN.

VOL. I.] CHARLESTON, S. C., OCTOBER, 1869. [No. I.

D. H. JACQUES, EDITOR.

OURSELVES AND OUR WORK.

We trust that our readers will excuse the absence of any formal introduction or labored salutatory. We prefer to address ourselves at once to the work before us, leaving the public to judge us rather by what we may do than by any professions we might make in advance. It will be sufficient simply to say here that we—speaking for editor and publishers alike—believing that such a work is needed in our State, have undertaken to issue an illustrated rural magazine, devoted to the interests of agriculture, horticulture and the industrial arts generally, and calculated, as we believe, to promote the prosperity of the country, and the intellectual improvement, virtue and happiness of our people; and we shall do our best, sparing no labor or expense, to make it in every way worthy of the patronage of those to whom we look for encouragement and support—giving them the full benefit of whatever knowledge, skill and experience we may possess, and can acquire or command. For the details of our plan we refer to our exposition of it, elsewhere presented, and to this number of the magazine itself, in which we have developed its various features as fully as was possible under the disadvantages which always attend the commencement of a publication of this kind.

We underrate neither the importance nor the difficulty of the work before us and before the people of the South. We are brought face to face with new conditions and new needs. The very foundations of our prosperity having been overturned, we are called upon, in relaying them, to consider well the character of the new superstructure for which we are preparing. The changed relations of capital and labor necessitate new methods of working, and novel and difficult problems in political economy, as well as in practical industry, present themselves for solution. It is not, therefore, with any feeling of self-sufficiency that we accept our position and enter upon the task we have undertaken. Were we not permitted to count upon the assistance of some of the best minds in the State and in the South, in the discussion of the great industrial and social questions now before our people, we might shrink from the responsibilities devolving upon us; but knowing that where help is needed we shall not call for it in vain, we cheerfully set about our appointed work.

OUR NAME.

The name of our magazine has been chosen from among a large number which had been suggested by various friends and well-wishers of the work, (all of whom will please accept our thanks,) as, on the whole, best suited to our purpose and likely to be most generally approved. It is sufficiently distinctive, eminently suggestive, and singularly pleasant to the ear. We indulge the hope that it will soon become, and long continue to be, "familiar as household words" in many thousands of Southern homes.

PLAN OF THE RURAL CAROLINIAN.

THE RURAL CAROLINIAN is devoted to Progress in Agriculture, Horticulture, the Mechanic Arts and Domestic Economy, and to the Intellectual, Moral and Social Improvement of our people. To promote the end in view, we have adopted a comprehensive plan, embracing a great variety of topics and admitting many different modes of treatment, keeping in view in all things the interests and needs of the Rural Population of the South. In our

AGRICULTURAL DEPARTMENT,

we shall advocate the introduction of Improved Implements of all kinds, (giving pref-

erence, other things being equal, to those invented and manufactured at the South;) a deeper and more thorough Preparation of the Soil than has heretofore been generally practiced; the making, saving and liberal use of Manure; a Variety of Crops—not forgetting Cotton—and Economy of Labor. In our

HORTICULTURAL DEPARTMENT,

Fruit Growing and Market Gardening, destined to become important interests in portions of South Carolina and other Southern States, will receive special attention and careful consideration, with a view to the introduction of the Best Varieties of Fruits and Vegetables and the most judicious Modes of Cultivation. The

STOCK DEPARTMENT

will be made as full and complete as the materials at our command will permit. Believing that Stock-raising, to a certain extent, must form the basis of a correct system of Agriculture, we shall endeavor to show how it can be made practicable and profitable, and to indicate what breeds of Horses, Cattle, Hogs, Sheep, and other domestic animals, are best suited to our climate and situation. Our

MECHANICAL DEPARTMENT

will comprise notices of new and valuable Machinery, Implements and Methods of Working; facts and figures in regard to Mining and Manufacturing in the South and elsewhere; descriptions of New Inventions, and other matters pertaining to the Mechanic Arts. In matters pertaining to

RURAL ART,

we shall endeavor to impress upon the minds of our readers the fact that comfortable and beautiful Country Homes cost little if any more than the inconvenient and unattractive ones now too common, and we shall from time to time give plans and suggestions for improvement in Rural Architecture and Adornment. The Ladies' Department, or

DEPARTMENT OF HOUSEHOLD ECONOMY,

the science, arts and literature of the kitchen, the dining-room and the nursery—will not be neglected, and we shall do what we can (and with the help of the ladies themselves we hope to do much) to promote Comfort, Health, Taste, Thrift, and economy in every branch of Household Industry. The

DEPARTMENT OF LITERARY MISCELLANY

will furnish interesting reading for the family circle—choice Sketches, Biographies, Anecdotes, Poetry, etc., suited to the tastes of young and old. Of the

EDITORIAL DEPARTMENT

we will say nothing, except that we shall try to make it less dull than editorial departments frequently are, and to be at least instructive if not entertaining. Having before us all the Agricultural, Horticultural and Mechanical papers and magazines of the country, we shall give our readers, in a condensed form, the most important Facts and Ideas we can gather from them. We shall also compile from our correspondence Reports of the Weather and the Crops in all parts of the country.

In every department we are counting not merely upon our own knowledge and experience, but upon the active coöperation and assistance of numerous and able contributors in all parts of the State and of the other Southern States. With that coöperation and aid, we feel no hesitation in promising our patrons an Agricultural and Mechanical Journal inferior to none in the country. Reader, are you willing to aid in sustaining it?

THE FIRST NUMBER.

Editors and publishers very naturally strive to make the first number of a new paper or magazine as valuable and attractive as possible, but they always labor under certain disadvantages, which only those who have been engaged in editing and publishing can fully appreciate, and their model issue always leaves room for improvement. We have done the best we could under the circumstances in the number before the reader, and have no apologies to make; but when our large and able corps of contributors can be brought fairly into the work; when our correspondents in all parts of the country shall have furnished us with their reports; when our agricultural and horticultural exchanges shall have come in freighted with facts and suggestions, and when all branches of our service shall have been brought into effective

operation, we hope to offer our patrons far better numbers than this. On account of the backwardness of some of our contributors we have been obliged to make *ourselves* quite too prominent in this number. We trust that in future our friends will move to the front in force and throw us more into the background.

TO CONTRIBUTORS.

We want good, sound, practical articles on all subjects coming properly within the scope of our magazine, and we solicit every one who has any important facts or ideas bearing upon agriculture, horticulture, or the mechanical and household arts, and knows how to put them upon paper, to give our readers the benefit of them. We want, especially, *records of actual experience* in the cultivation of the various crops, the use of manures, the raising of stock, the management of labor, etc. Make all articles as brief as a proper presentation of the subject will permit. If you have any apologies or explanations to make, (which are seldom called for,) put them on a separate sheet. Write no long introductions; come at once to the subject to be treated; use no unnecessary words; and when you have said all that is essential to a clear understanding of the matter, stop at once.

We cannot, of course, promise to publish every article that we receive. We will give all contributions sent us a careful examination and make use, so far as our space will permit, of such as we think will add to the interest and value of our magazine. The name and address of the writer must accompany each article, and, unless he object, will be affixed to it in publication. Articles having no signature, or other indication of their origin, may be considered editorial, whether in our special department or not.

OUR COTEMPORARIES.

To our cotemporaries, and especially to the agricultural press of the country, we send, with this number, our friendly greetings, and ask admission into their ranks and such a "notice" as they may think us entitled to. We enter the field as a co-worker, and not as an enemy or a rival. We rejoice in their existence, and congratulate them on their well deserved success. There is room enough for us all and a special work for each. We shall try to do ours in an earnest, straightforward, honest and manly way. Please put The Rural Carolinian on your exchange list.

AGRICULTURAL SOCIETY.

Every man who has the interests of the State at heart, should become a member of the South Carolina State Agricultural and Mechanical Society, and if practicable, an exhibitor at the Sixth Annual Fair to be held at Columbia, on the 10th, 11th and 12th of next month. The objects of the Society are such as every one must approve; its organization and plan of operations are admirable; and its officers men of practical ability, experience and energy, as well as of influence and high standing in the State. All the Society needs in order to become a most powerful instrument for the promotion of the material interests of the Commonwealth, is the support and active coöperation of the people; and it is not the planter, the farmer, the manufacturer and the mechanic alone who are interested in its success. Our factors, merchants and traders of every description will profit largely by its influence, and should aid in promoting its objects and increasing its efficiency. We shall expect every subscriber of The Rural Carolinian, residing in this State, to become a member of the State Agricultural and Mechanical Society.

FLORIDA.

We are glad to learn that our sister State—the land of flowers—is still advancing in her career of prosperity, her excellent soil, her noble rivers, her fine harbors and her incomparable climate attracting immigration from all parts of the country South and North. We hope to aid in developing her resources by giving her people an agricultural and horticultural magazine adapted to their wants as well as to our own. To that end we shall devote considerable attention to the peculiar products of her semi-tropical climate, giving articles on the cultivation of the

orange, the lemon, the banana, the pine-apple, the date-palm and other tropical fruits, as well as on that of rice, sugar-cane, long staple cotton, Sisal hemp and the ramie, etc. Having resided in Florida, we know something of the needs of her agriculturists, in the way of rural literature, and shall aim to supply them, so far as we can consistently, with a proper attention to other interests.

THE IMMIGRATION SOCIETY.

The Immigration Society, of Newberry, now, by the action of the State Agricultural and Mechanical Society, the central organization of the State for procuring foreign labor, has issued a circular, setting forth its plan of operations, which, we are sorry to say, reached us too late for insertion in this number. The Society is a most important and useful one, and we hope its operations may be widely extended. We give elsewhere an interesting article on the subject of immigration, from the pen of the worthy President of this Society, Rev. T. S. Boinest. All persons interested in procuring European laborers should at once send for the circular, addressing F. W. Brüggemann, general agent, Newberry Courthouse, S. C.

CROP REPORTS.

We are desirous of receiving from trustworthy sources in all parts of the State, and of other States, so far as may be practicable, monthly reports of the weather, the condition of crops, the prices of farm produce, and other important or interesting facts, bearing upon the industrial interests of the country. Such reports should be brief, definite, and based either on personal observation or trustworthy information, and should be sent in about the fifteenth of each month, to appear in the next number issued.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Cotton picking will, of course, demand continued attention. See that it is done not only rapidly but carefully, so that there be no unnecessary waste. It is likely to bring a good price, as the crop will not be large. The preparation of the land for wheat, rye and barley should now be commenced, and a portion of the crop may be sown in some localities, especially patches for spring grazing or soiling. Wheat requires a soil either manured or of considerable natural strength to make it a paying crop, and the land must be thoroughly prepared. Avoid situations where there is likely to be too much moisture during the spring. Clayey loams are excellent for wheat, and rather light calcareous soils, *if in a good condition*, produce fair crops. On poor soils, sow rye in preference. Barley is a grain that has received too little attention in this country. See "Experiments with Barley and Clover," in another department. Dig sweet potatoes toward the last of this month where there is reason to expect frost. If any reader has an improved method of preserving this important crop during the winter and spring, we shall be glad to give our patrons the benefit of it. As a protection against the weevil, stow away corn in the shuck. Painting the inner walls of the crib with a preparation of coal tar is said to diminish greatly their ravages. Save all the forage you conveniently can. A farmer seldom has too much. Ditching and draining may be undertaken now whenever force can be spared from more urgent operations.

GARDEN WORK.

Two sowings of cabbage may be made this month. Early York is the best sort we know for fall sowing. The ground should be rich and deeply dug. Sow in drills six inches apart and one inch deep. Water in the evening if the weather be dry. Hoe turnips, if sown in drills, as is best, and keep down the weeds everywhere in the garden, if any are still flourishing. Turnips may still be sown in the low country. Sow lettuce any time during the month. Brown Dutch is as good as any, if the color be not considered objectionable for fall sowing, and surer than most other kinds. Hammersmith is also excellent and stands the winter well. In the low country continue to sow radishes to keep up a succession. Scarlet Short Top and Oval Rose are the best kinds. Sow Spinach abundantly for a supply of excellent greens. The Prickly Seeded is best for the winter crop. Sow in

moist weather, in drills twelve or fifteen inches apart, and water if dry. Thin out by degrees. Put out Leeks and Onions and earth up Celery. Clean up the garden, and carry everything that will make manure to the compost heap, that none of the elements of fertility be lost. Gather and save (by canning or drying, when they will not otherwise keep) all kinds of fruit that are in season. You will find it a great luxury in the winter.

RURAL NOTES AND QUERIES.

The Peeler Cotton.—"I have seen in the papers brief notices of a new variety of cotton called the Peeler Cotton. Do you think it valuable? Wherein does it differ from the common short staple? Is it a black seed cotton? C. M. R."

The Peeler is not a black seed cotton. It resembles the sea island cotton in the length and fineness of its staple but not in its habit of growth. It was discovered three or four years ago in an accidental manner. Mr. Peeler, a planter in Mississippi, found among his ordinary standing crop a plant bearing much finer and longer staple than the rest. He carefully saved the seed, which he planted the next year, the year after, and until he had seed enough of the new variety to sell to his neighbors. Thus it spread and acquired the name of Peeler cotton. The first bale of this cotton that reached New York is said to have been sold for fifty cents a pound. The price last fall, in New Orleans, we believe ranged from thirty to thirty-five cents. As considerable of it has been planted this season, we presume its real value will be pretty well tested. We hope much from it.

Pea Vine Hay.—T. B. The old rail pen plan of curing pea vines is the best we know for general adoption. It is perfectly efficient. It is simply this: Build a pen two or three rails high, and throw across it a flooring of rails; build up three or four rails higher; fill in with freshly cut vines; then throw another flooring of rails across, and proceed as before until a pen ten or twelve feet high is made; then roof over as you would a shuck pen.

A New Vegetable.—The Japanese colony in California are to introduce there the cultivation of the bamboo, which, besides its use in varied articles of manufacture, is much esteemed among them as an esculent. The young sprouts combine the virtues of the artichoke and the asparagus. They are more marrowy and delicious than either, and in size each is greater than an entire bunch of asparagus. It is said to surpass most of our home vegetables in nutriment and kindly digestion. It should be tried here. It is easily propagated by suckers, and we believe also by cuttings.

Cotton in Hills.—Some experiments, we understand, have been made this season with cotton by planting in hills. We shall be glad to report results. It has been stated that experiments in hill planting, made last year, were exceedingly favorable. The method, we are aware, is not new, but it is one that has not been generally tested.

The Cashmere Goat.—The Cashmere goat was introduced into South Carolina in 1849, by Dr. J. B. Davis. Can you or any of your readers tell me the results of the experiment, and whether any of these animals are now to be found in the country?

J. H.

Pampas Grass.—Pampas Grass, growing in clumps and masses, has a very fine effect on ornamental grounds, and is very readily grown.

It likes a moist, rich soil, its natural habitat being beside the rapid and frequently swollen streams of South America, but where the ground is not naturally moist, frequent watering with liquid manure will produce a luxuriant growth.

Irish Potatoes.—About the first of May, 1869, I planted a few rows of Irish potatoes. We had little or no rain until the latter part of July, but very hot weather in the month of June. The vines grew quite rank, and while they were growing a large squash vine ran over one end of the rows. About the first of August I commenced to dig them, but found potatoes only in that part of the rows covered by the vine.

Query. Was it the shading of the ground by the vine that made the potatoes? F. S.

We have no doubt but that the shade of the vine, preventing the so rapid evaporation of the moisture in the ground, made the difference observed. A heavy mulching of the whole ground between the rows and close about the plants would, probably, have ensured a crop on the whole patch.

What's in a Name?—A new Bolivian annual is called the *Palaver*, and we read of another plant, whose appellation a line of our type will not compass—*Primula Sinensis fimbriata punctata elegantissima.* The poor thing lived, it is said, in spite of its name.

LITERARY AND SCIENTIFIC NOTES.

One of the most valuable works lately issued from the American press is the revised and enlarged edition of Dr. Francis Peyre Porcher's "Resources of the Southern Fields and Forests." As a hand-book of scientific and popular information concerning the useful properties of the trees, plants and shrubs found within the limits of the Southern States, whether employed in medicine and the arts for manufacturing purposes, or in domestic economy, it leaves little to be desired, and no planter, farmer, manufacturer, druggist or physician can well afford to be without it. It should have a place in every book-case, and be always at hand for reference. It is a work of great research, and must have cost the author an immense amount of labor, introducing, describing and illustrating, as it does, the uses of more than five hundred substances, possessing every variety of useful quality—textile fibres, silks, materials for paper, dyes, gums, oils, resins, grains, fruits, vegetables, forage plants, barks, woods, etc. Dr. Porcher has here placed in a very strong light the exceeding richness of our Southern country in the products of the vegetable kingdom, and opened to our view sources of individual and national wealth which, although directly under our eyes, have hitherto never been rightly discerned. The author's suggestions in regard to the drainage of our swamp lands are worthy of the most careful consideration. We hope, not on the author's account merely, but also for the sake of the country whose prosperity it will promote, that this work will have an extensive sale. It comes before us at a time when every help is needed in the way of information and suggestion as to the best means of diversifying our industry, and developing our latent resources. The book is printed for the author by Walker, Evans & Cogswell, Charleston, and in typography and binding will compare favorably with the best work executed at the North.

——*The XIX Century*, for September, has several noteworthy articles. "The Political Crisis," the first of a series of papers on the condition of the country, has attracted much attention. Ex-Governor Perry's sketch of William C. Preston is interesting, but too brief, and Mr. Simms' poem, "Among the Ruins," full of power and pathos. "Our Early Authors," "Shoulder to Shoulder" and "Bearding the Lion," (the last a story,) are all excellent, each in its way. The editor's department is lively and piquant as usual. We are glad to learn that our handsome and entertaining cotemporary and neighbor is steadily gaining in popularity and circulation. XIX Century Company, publishers, Charleston, S. C.

——It has been shown that the longevity of philosophers and men of science is greater than that of any other class. A contributor to *Appletons' Journal* shows, by means of long lists of names and ages of each class, that the average duration of the lives of scientific men is 69⅓ years; of poets and artists, 64¾; and of men of action, such as warriors and rulers, about 61.

——Certain philosophers call in question the existence of a soul in man; but a Professor Boscowitz has written a book entitled "The

Soul of Plants," the aim of which is to show that plants are animated creatures, capable of voluntary acts. This is the revival of an old doctrine believed by Pythagoras, Plato and others among the ancients, and consecrated in the laws of Manou, in which it is said "plants and animals have within them a sense of their existence, and have also their pains and pleasures." See the article entitled "Wonders of Vegetable Life."

——Juvenile magazines are numerous and some of them are good, but they are generally intended for boys and girls who are considerably advanced in reading, and too often they are not written in a style at all suited even to their comprehension. There is one publication intended for children to which these remarks do not apply. *The Nursery*, published by John L. Shorey, 13 Washington street, Boston, and edited by Fanny P. Seaverns, is "a magazine for youngest readers," and, as we know by its use in our own family, most admirably adapted to the purpose for which it is intended. Any child who can read at all, can read and understand its little stories, sketches and poems, but older readers are almost as much interested in them as the little nursery folks themselves. Its illustrations are exceedingly good—in fact we know no publication of any kind which publishes better wood cuts. See "Little Willie at the Farm," which we borrow from *The Nursery* as an example. Such pictures please old and young alike.

——The *Southern Cultivator*, now in its seventeenth year, keeps up its well earned reputation. Our neighbors of Georgia may well be proud of their organ, and should see to it that it shall never lack adequate support. Under the charge of its present able editors, Messrs. Wm. & W. L. Jones, it has been steadily advancing in prosperity and usefulness.

——Virginia agriculture and horticulture are ably represented by the *Southern Planter and Farmer*, published at Richmond, by C. B. Williams, a farmer, who knows how to write about farming, assisted by Frank G. Ruffin, also a practical man and a good writer, and in the horticultural department by John M. Allen, whose qualifications for his post are well attested. The *Planter and Farmer* is a good magazine, well conducted and well printed, and we wish it the success it deserves.

——One of the best of the Northern weekly papers is the *Rural New Yorker*, published by D. D. T. Moore, New York, and it is as liberal and unsectional as it is entertaining and instructive. Dr. Daniel Lee, formerly professor of agriculture in the University of Georgia, and now of Tennessee, is its Southern editorial contributor.

——*The Country Gentleman*, published at Albany, N. Y., by Luther Tucker & Son, though not the most showy or the most advertised and puffed, is the *best* of the strictly agricultural journals of the North. No farmer, North or South, can read it, week by week, without great profit. We heartily welcome it to our sanctum.

——M. Mouchot, of Paris, has invented what he calls a solar steam engine, in which a spherical mirror or reflector of a hollow form is placed in such a position as to receive the full strength of the falling sunbeams, the intensified heat of which is communicated to the boiler. A model now on exhibition is said to work admirably. It is believed by the inventor that in intertropical climates, such engines will be found the most economical motive power yet known.

Practical farmers and planters, who have ideas, facts and experience that would be useful to our readers, need not hesitate to send them in because they may be unaccustomed to write for the press. We will willingly undertake to correct and properly prepare any article of reasonable length that may contain valuable thoughts or useful information.

We observe that the estate of the late Hon. James H. Hammond, partly on Beach Island, S. C., embracing Colde Wade and the Silverton residence, Silver Bluff, Cedar Grove and other tracts, in all between ten thousand and eleven thousand acres, will be sold at public sale on the 20th of the present month, at the Club House on Beach Island, by order of the executor. The estate includes some of the best and most productive land in the State, and in the highest condition of culture.

We shall be glad to receive from the friends of agricultural and horticultural progress in all parts of the world specimens of new, rare, or curious plants and seeds, for the purpose of testing them on our own grounds and reporting the result through THE RURAL CAROLINIAN.

Experiment carefully, observe closely, note the results accurately, and report them clearly and concisely through THE RURAL CAROLINIAN.

BUSINESS NOTICES.

TO CORRESPONDENTS.—All articles intended for publication, and all inquiries relating to subjects treated in our columns should be addressed to the editor, and all subscriptions and business letters to the publishers.

AGENTS WANTED.—Canvassing agents are wanted in every county in the State, to whom the most liberal inducements will be offered. For further information, address the publishers.

WANTED.—We wish to obtain one copy each of the Reports of the Department of Agriculture, for the years 1863, 1864 and 1865, for each of which we will send THE RURAL CAROLINIAN for one year.

——When articles are received later than the fifteenth of the month they can seldom appear in the next number, as we are obliged to go to press soon after that date.

——In ordering THE RURAL CAROLINIAN, please be careful to write your name and postoffice as plainly as possible, giving the county as well as the State.

——We shall publish at an early day—probably in our next number—articles on "The Coolies and Coolie Labor;" "Cotton Manufacturing;" "Market Gardening in the South;" "Strawberry Culture;" "How to Plant Trees and Vines;" "China Grass and Ramie;" "The Steam Plow for the South;" "Concerning Agricultural Fairs," and many other subjects of special interest.

Department of Literary Miscellany.

TRUE WOMANHOOD.

Walking amid no troublous fears
That throng the paths of men,
Wielding no editorial shears,
No keen polemic pen,
Daring no intellectual heights,
And neither sage nor preacher,
True womanhood has yet the "rights"
Fanatics cannot teach her.

What mission lovelier than to be
Home's angel, blithe and fair,
O thou in whose calm looks we see
A mother's holy care?
What grander purpose than to fill
Thy sacred sphere of duty,
And mould, with reverential skill,
Its ruggedness to beauty?

Chairwoman of thy romping pets,
What prouder rule than thine,
Whereon a heavenly sanction sets
Authority divine?
Thy cherub-congress well content
To recognize their Speaker,
What privilege of enfranchisement
More precious to the seeker?

[*Edgar Fawcett.*

WONDERS OF VEGETABLE LIFE.

Among the mysterious plants whose capacity for transformation of hue and shape borders on the marvellous, the Mimosa may be named first. Upon the slightest shock or the least agitation of the ground it stands in, it closes its leaves, bends its tendrils downward, and seems to fade with terror, as a frail child might turn pallid in swooning.

The *Flower of Mary*, also called the Rose of Judea, the Rose of Jericho, and scientifically, the *Anastatica*, is another of these remarkable plants. The Arabs give it the name we have first used, and hold it in great reverence. When it has expanded in a soil not well adapted to the fructification of its seeds, it detaches the root that kept it in its place, holding on by a very delicate little fibre only, and, at last, letting that go, abandons itself to the wind, that sweeps it away to some moister and more invigorating soil, in which it may drop its ripened seed without apprehension.

The *Resurrection Flower* is still more amazing. Only two individuals of the species have been known, and they grew on the same plant. The latter was given to Dr. Deck, the naturalist, by an Arab whose life he had saved. Some time afterward, the doctor gave one of these precious flowers to the celebrated Humboldt.

The Arab's gift was by no means attractive, at first sight—a slender stalk supporting two small, dry and scorched-looking pellets! But the son of the Desert strenuously affirmed that this treasure had been found in a tomb, upon the bosom of an ancient Egyptian priestess, and loudly vaunted its wonderful properties. In truth, the professor had hardly moistened the flower, ere he saw that "the Arab was right. This plant exerts a powerful, an ineffable charm over the man who beholds it for the first time. Scarcely has one sprinkled a little water on it, ere it begins to stir; the stalk rises erect; the flower slowly opens; and the frail petals unfold one by one, to dispose themselves in radiating order around a central point. At this moment the flower looks like a little field daisy, but after a moment of hesitation it abruptly turns over its corolla, and exhibits its bosom on which the seeds are seen deposited."

In this crowning phase of its existence, it offers a vague resemblance to the *passion flower*. Although smaller than the latter, it has its bearing, and, to some extent, its shape and outlines. If it lacks the perfume and the glowing beauty of the passion flower, it has, on the other hand, those extremely delicate rainbow tints and diaphanous petals that make it a flower with which it is difficult to compare any other. After some moments of active life this resurrected bloom begins to fade again; the stalk looses its strength; the flower contracts and closes; the petals fold themselves gently over each other, and all at once the plant shrinks together as though struck with a sudden stupor.

In the *oscillating desmondia*, the lateral leaves move continually by little jerks very similar to those of the second-hand on a watch! The leaves grow in couples, and while one is ascending the other is descending in an exactly equal ratio. The rapidity of these movements increases with the heat and moisture. In the East Indies, there have been sixty of these motions noticed in one minute, and thus the idea of a vegetative timepiece is curiously carried out. This plant was discovered by Mrs. Monson, a distinguished English naturalist, who died in the East during her scientific journeys. It was first seen by her at Bengal.

The *Fly-catcher* is another remarkable plant, indigenous to the American Continent. It ranks high in the possession of faculties hitherto ascribed to animals. John Bartram first sent a specimen to Europe, and his son, William Bartram, poetically describes it. A drop of honey distilled in its own laboratory is revealed between two roseate petals. A fly, gnat, or even a little worm, attracted by the luscious food, becomes entangled; the petals, moved by vigorous springs, close upon it and it is stifled.

Very numerous and careful experiments and close observation have shown that plants diversify their mode of growth according to their nature, their requirements, their positions and their relations to outside influences. Sometimes they hasten it, sometimes they slacken it; but above all, they are seen directing it to this side for a point of support, to that in order to get light, to take root in a nutritious soil, or to clasp some other plant on which to depend for nourishment. Plants exert themselves to reach their object; they feel their way; if needs be, they will change their direction, not once, but often; they will even modify their organs. Thus climbing plants will *make abortions of their leaves and flowers, in order to transform them into hooks or hands.*

In a word, activity and variableness of growth in plants do not appear to be either the effect of chance nor always that of the vitality of the individual, but the result of an impulse communicated by a sort of intelligent combination, and consequently possessing the characteristics of spontaneous and voluntary action.—*Appletons' Journal.*

A SOUTHERN HOME.

The following picture is drawn from nature, and, charming as it is, presents few features that might not belong to any Southern home. That they are not oftener realized, is the fault of man and not of nature:

"Near the Gulf, on a small stream or bayou, as they are called from the native Indian tongue, is a well built house with broad porches around it. The grounds are well planted with a great variety of flowers, shrubs and evergreen shade and forest trees, bordered with bananas and groves of tall pecans, yielding delicious nuts; near at hand is a garden plot filled with rare flowers, blooming the year round in the open air, and now, in the last of December, filling the air with their perfume. In the rear is an extensive vegetable garden, from which may be taken, any summer's day, full twenty species of vegetables for the table, and in which now, in midwinter, may be seen cabbages, kohl-rabbi, cauliflower, brocoli, lettuce, spinach, cresses, mustard, turnips, carrots, beets, parsnips, radishes, onions, leeks, eschalots, parsley, green peas, egg plants, salsify, rhubarb, okra, celery and others. Close at hand is an orange grove on one side, loaded with golden fruit, on the other side is an orchard of peach, apple and pear, plum, fig and quince trees, with here and there pomegranate and persimmons. A vine trellis is loaded with vines of many varieties; here is the mespilus or Japan plum, some in full bloom, others with the fruit half grown, ready to ripen in February. Blackberries, raspberries, strawberries, currants and

gooseberries grow in the garden each in its season. Beehives surround the yard. A dairy well filled with milk, cream, butter and buttermilk. In front of the house, and connected with the bayou, is a fishpond well stocked with fish and surrounded by ozier willow. Extensive poultry yards contain turkeys, peafowls, guineahens and chickens of all kinds. A dove cote is swarming with pigeons, each pair of which furnish fat squabs ten times a year for the table; any number of geese and ducks may be seen sporting in the bayou. A large cowhouse is stocked with sleek cows, which keep in full flesh on the ever green grass alone. Sheep, goats, hogs, horses, mules, fat calves and bullocks may be seen everywhere in the pastures. Large deep underground cisterns furnish pure drinking water in abundance. The sea breeze moderates the heat of summer and tempers the cold of winter. Bear, deer, cranes, wild geese, brandt, ducks, quails, woodcock, snipe, doves and squirrels abound, while near at hand the Gulf teems with the finest fish, oysters, crabs and shrimps. Good roads and convenient railroad and water transportation furnish quick and certain means of access to market. This is no fancy sketch, and any one may have all these comforts and many more with but little effort in this favored clime. What a difference between the South and the Northwest."

[*De Bow's Review.*

A WORD-PICTURE.

Tall, odorous grass and rustling reed
  Waved idly by a broad lagoon;
And there the hunter reined his steed:
  The shadows of a broad mid-noon
Were short and round beneath the trees,
  Whose beard-like moss hung calm and still,
As sails of ships upon the seas
  Where winds are charmed by evil will.

A tender lily's slender stalk
  Beside the marsh grew green and bland;
On broad pimento poised a hawk
  That dared the hunter's practiced hand;
A single swan swam on the lake,
  With royal breast and graceful wing;
But down the rich and gloomy brake
  There stirred no other living thing.

[*Mollie E. Moore.*

PITHY BREVITIES.

——The Arabs allow a man to divorce himself from a wife who does not make good bread.

——An editor, alluding to the demand for female suffrage, female doctors, and female clergymen, remarks that another want presents itself—that of female women.

——In reply to a paper which called General Sherman "the coming man," a Georgia journal says it "hopes that he is not coming that way again."

——The following notice was pasted on a large box which passed over the Pacific Railroad a few days since: "Baggage-smashers are requested to handle this box with care, as it contains nitro-glycerine, Greek fire, guncotton and two live gorillas."

——A patent has been obtained for the manufacture of water-proof paper. It will be no uncommon thing, by and by, to carry a quart of milk home in a paper bag.

——"*Sic sum*," said an invalid Frenchman in reply to a friendly inquiry if he were ill.

——It is better to spend an hour hanging loose doors and gates than in hanging round taverns and stores.

——In the wine-growing regions of California, wine is cheaper than milk, the latter costing fifty cents a gallon and the former selling for from twenty-five to forty cents a gallon.

——"Nature's methods," a late writer says, "are methods of immense deliberation; and we can do no better than to contribute ourselves to her slow experiment, and look for results in the future."

——An English farmer, by picking over his seed wheat with the utmost care, and planting a grain in a place, at intervals of a foot each way, produced one hundred and sixty bushels to the acre.

Hygiene and Household Economy.

TO THE LADIES.

The ladies are respectfully invited to contribute to this department, and thus help us to make it interesting and useful. Almost every housekeeper has some particular dish in the preparation of which she excels, some original recipe, or a peculiar process for the preparation of some article of domestic consumption. Here is an opportunity to confer a benefit upon others by making known such peculiar modes, processes and recipes. One fair reader is noted for the excellent bread which always appears upon her table, or for light, sweet and wholesome biscuits. She could tell us how she makes them. Another concocts a delicious cake or pie that no one else knows how to produce. She can earn the thanks of thousands by sending the recipe to The Rural Carolinian. So in regard

to making coffee and tea; preserving, canning and drying fruits; cleansing and starching; needlework; knitting and netting; the decoration of rooms; the care of children; the preservation of health; the management of servants—in short, in whatever pertains to "the woman's kingdom," the ladies can aid us and benefit each other very greatly. May we not hope to hear from them?

THE LAW OF WORK AND PLAY.

People are in the habit of expending a vast amount of sympathy for the overtasked children of toil, the drudges on tropical plantations, the weavers in factories, the diggers in mines, the navvies who grade railroads across continents. But these are not the hardest workers in the world. Brain has to pioneer for muscle in every department of industry. Whitney had to lie awake nights studying out the construction of the cotton gin, before a million tawny hands could separate the seed from the fibre. Ericcson had to torture his brain to invent the monitors, before a thousand men, obeying his grand thought, went to the furnace and the forge. Watt, and Fulton, and Stephenson had to work out the deep problems of mechanical force, before the legions of common men could plow oceans and penetrate continents with steam travel. So, in all the vast history of industrial life, by whose process civilization has been carried forward, the thinkers have been the chief, and likewise the most unrecognized martyrs. In the case of multitudes of these, neither inward zeal, nor the demands of the world, would allow the requisite measure of repose and recreation. But if any man has a right to what plaything his caprice may elect, and twelve hours' sleep out of twenty-four, it is the man who drafts the patterns by which other men work. Blind Tom plays the symphonies of Beethoven, and grows fat like any other animal who has plenty to eat, and lives wholly in the realm of instinct. But a great brain had to make wearisome pilgrimages into the labyrinths of harmony in order to the mechanical movements of those black fingers. And the world will excuse Beethoven for having been a nervous and petulant hypochondriac, considering what a wonderful work he achieved in the domain of creative art.

We have heard of the famous drives of a certain great railroad king after his fast trotters, and the daily game of whist with which he forgets the vexatious cares of the counting room. Surely if any man in America requires such sort of safety valves, he does. Had he not had them, doubtless he would have been in his grave, or mayhap in an insane asylum, a score of years ago. It would be both interesting and suggestive to look over the history of literature, and catalogue the toys of great students, the fiddle of Martin Luther, the fishing rods of Walton and Paley, the dog and gun of Wilson, the saddle horse and tent of Scott, the tame hares of Cowper, the sail-boat of Keats and Byron, the fancy farm of Webster, for even these sober and practical institutions must be considered playthings for the men who used them, and the purposes for which they were used.

The fundamental truth is, that work and not play is the grand business of life. A man must work before he shall have a right to play. And, moreover, the quality and quantity of his work shall prescribe the measure of his recreative privileges. It is a grave error which people indulge, that money gives one an immunity from toil, and a permission of habitual lounging. Recreation is, in fact, an impossibility to a man who never puts faculty on the stretch for any great purpose of personal culture and the advancement of the world. What implement of honest work, has that man re-created who never does anything but dose and play from one year's end to another? What right has a man to fish for trout, who has never fished for souls? What right has a man to go to Chammounix or the Rhine, who never has grown weary for just once, in some noble errand for the world's good? Consider, likewise, as I have just suggested, the quality of a man's work, as bearing upon the measure of recreative privilege. A man who retails dry goods or groceries, who makes entries in the day-book, who engages in mechanical labor, can with average health, work his eight hours a day, without personal damage, for three hundred days in the year. But compel him to the task of original composition by such a scale of duty, and unless he is a wholly exceptional instance of endurance, you will break him down in less than six months. So with any other branch of industry, which imposes tasks specially upon nervous force through the great centre and source thereof.

[*J. L. Corning, in The Herald of Health.*

RECIPES.

How to Make Coffee.—As *good* coffee is one of the rarest of luxuries on American tables, we hope to merit the thanks of many a fair housekeeper for the following hints:

1. To have good coffee the first essential is to procure the genuine berry in a perfect and undamaged state. Mocha is best, but is always dear, and cannot now be had at any price. Java is generally considered as next in quality, but tastes differ.

2. It must be properly roasted. Here there is generally a total failure. In roasting, the

heat should be strong, and the operation as brief as possible. It is sufficiently roasted *when the oil begins to appear on the surface*, and not before. Avoid *burning*. A single charred berry spoils the whole.

3. Grind fine and just before using, as it loses strength and flavor rapidly.

4. It must not be boiled more than two or three minutes at most, and if you want the best possible cup of coffee, *it must not be boiled at all.* Use the French coffee-pot, in which it is made *by filtering boiling water through it.* In that way you get a strong *infusion* with all the proper flavor and aroma of coffee—a very different article from boiled coffee; but some may prefer the latter. Make it *very* strong, in either case, and dilute with rich *boiled* milk, adding cream if you have it, and sweeten to the taste with refined sugar. We use at least two parts of milk to one of coffee. It makes a draught which the gods or Olympus, with their cups overflowing with nectar, might covet. Try it, but do not forget that the coffee must be *very* strong to bear the dilution with milk that we recommend. If less milk or none at all be made use of, the dilution may be affected by adding water, but this should be done *in the cup.*

Drying Figs.—Mr. David Dickson, some years ago, communicated to the *Southern Cultivator* the following method of drying figs. Thus prepared, they are said to be equal to the imported article, and will keep any number of years.

1. Make three qualities or classes—first, figs not quite ripe; second, those barely ripe; third, fully ripe. Put each quality by themselves.

2. Scald in weak lye. This is to take the roughness off the skin. It is, however, not essential.

3. Boil in good sugar syrup ten or fifteen minutes; take out and dry in plates and dishes.

4. When fully dry bake or steam, to kill the fly eggs, and then pack in tight boxes, using a little powdered sugar. Seal up until wanted for use. If you use a drying furnace, there will be no fly eggs, and they will be ready, as soon as dry, for packing.

Tomatoes with Claret.—Choose firm, solid, but fully ripe tomatoes, scald them and remove the skins; slice, spread in a dish, sprinkle generously with white sugar, and pour claret wine over the whole.

Cream of Chocolate.—Here is a recipe communicated to the *Rural New Yorker* by a correspondent residing in Paris. The preparation is said to be perfectly delicious:

Put in a sauce-pan half a pound of chocolate, broken in small pieces; add a teacupful of milk, and when the chocolate is thoroughly dissolved, add another quart of milk, stiring it in slowly. Beat together the yolks of six eggs and the white of one, and add six tablespoonsful of powdered sugar. Beat, in another dish, the whites of five eggs; then mingle the yolks and whites and add the chocolate little by little. Strain the mixture and put it over the fire again for a few minutes, stirring it constantly.

To Expel Mosquitoes.—It is said that a room may be rid of mosquitoes by taking a piece of gum camphor about one-third the size of a hen's egg, and evaporate it by placing it in a tin vessel, holding it over a lamp or candle, taking care that is does not ignite. The smoke will soon fill the room and expel the mosquitoes.

Elder Bark Ointment.—Take the inside bark of the sweet elder, (*Sambucus Canadensis,*) and boil it down strong, strain it, and to half a pint of the liquor add a piece of mutton tallow and beeswax, each the size of a hen's egg; simmer until all the water is out; fresh butter may be used instead of mutton tallow, and will make a softer ointment. Good for burns, cuts and sores.

Graham Biscuit or Gems.—Bread light, sweet, delicious and eminently wholesome, may be made by mixing rapidly good unbolted wheat meal with cold water and a little salt, making a paste of proper consistence, which can ony be determined by experiments, pouring or dropping it quickly into a heated pan, (that with concave departments is best,) and placing it quickly in a hot oven, and baking as quickly as possible without burning, or the dough may be moulded and baked like ordinary biscuits. The heat of the oven and pan suddenly coagulates the gluten of the outside, which retains the steam formed within, and each particle of water being interspered with a particle of flour, and expanded into steam, separates the particles into cells, and being retained by the gluten, which is abundant in this natural flour, till it is cooked, the mass remains porous and digestible, and, containing no carbonic acid gas, is wholesome when eaten immediately, and, of course, equally so on becoming cold. This is the best and most wholesome of all bread.

Cream Pudding.—One quart of milk, five eggs, four tablespoonsful of flour, one tablespoonful of salt; boil the milk; moisten the flour with cold milk; add to the hot milk and boil three minutes; add the eggs and boil up a half a cup of sugar; flavor, turn into a dish for the table, and, just before sending to the table, strew half a cup of sugar over the top.

Buttered Baked Apples.—Peel and core the apples, leaving them whole; carefully butter a heavily tinned plate and arrange on it; fill the holes left by the cores with powdered sugar, and sprinkle the apples with melted butter, then bake twenty minutes. On serving put a little currant jelly in each of the cores.

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Improved Farm Implements—The Steam Plow.

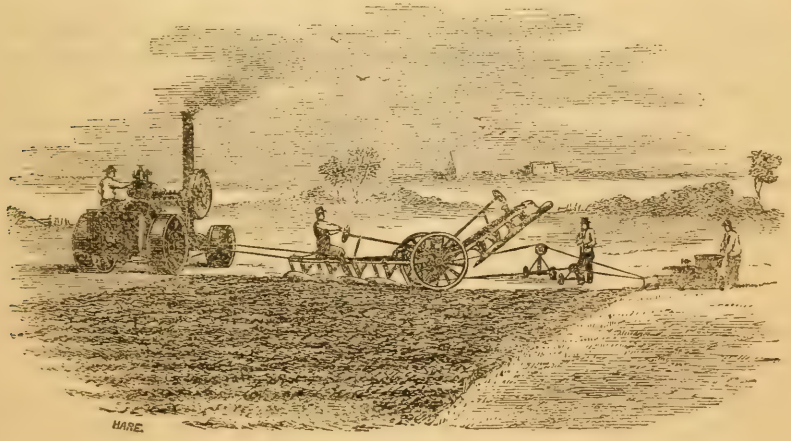


Fig. 1.—The Steam Plow in Operation.

Improved farming implies improved means and methods of working. If it be necessary to break up deeply and pulverize thoroughly our soils, we must have plows and diggers adapted to such work; and if labor be scarce, we must be enabled to economize it by means of labor-saving appliances. The plows with which we have hitherto been accustomed to scratch the surface of the ground are not suited to a system (like that of Mr. David Dickson, for instance,) which requires a thorough stirring of the soil to the depth of from eight to fifteen inches. For improved plowing we must have improved plows. There is no lack of such plows in the market, and the claims of the various kinds will no doubt be well set forth in due time through the advertising pages of The Rural Carolinian. Our own opinions concerning such as we may think it desirable to mention at all will be expressed independently, such

opinions not being in the market or paid for by any inventor, patentee or manufacturer.

To enable a few hands to accomplish the largest possible amount of work, we must press mechanical ingenuity into our service. Gang plows, sulky cultivators, and other contrivances for working broader surfaces at a single crossing of the field, must be brought into use. We are well aware of the ridicule that has been heaped upon certain implements of this class which have had a partial trial in the South. We are not ignorant of the fact that several of them have proved total failures in the hands of those who have tried them. In some cases, no doubt, the fault has lain in the implement; but in others it has certainly been chargeable to want of skill in the operators—a difficulty which a little perseverance would have overcome. In neither case is the principle invalidated. If the implements are not suited to our wants, we must improve them. If our laborers are unskilled, we must train them for their new duties, or procure skilful hands from abroad. If our pine stumps are in the way we must remove them; and this brings us to one of the first and most urgent needs of our farmers—a cheap and simple, but efficient Stump Puller.

Clearing land of stumps is heavy and somewhat expensive labor at best, but is by no means so formidable an undertaking as the reader, who has had no experience with the machinery in use for this purpose, will be apt to imagine, and there are few farmers who would not be able to remove these obstructions from all their fields, in the course of a few years, without involving themselves in any very heavy outlay.

There have been several very effective machines for extracting stumps introduced to the agricultural public, but there is still room for improvement in this line, and we have strong hopes of soon being able to introduce to our readers a new Southern invention that will supersede all others. In the meantime, Crawford's Stump Extractor and Rock Lifter, and other similar machines may be employed with advantage.

After the Stump Puller may come the gang plow, the rotary digger, the much abused sulky cultivator, (or a better machine on the same general plan,) the mower and reaper, and other labor-saving and soil-improving implements; and finally the steam plow. We are not visionary, and do not expect all these things at once. The work of substituting new and better implements and methods for those now in vogue will be gradual, but a beginning should be made at once; and this is not a mere matter of good policy. It is a *necessity*. By the use of improved implements and a better system of tillage alone can we compete with the great, fertile West, where such improvements have been adopted. There, you may travel for hundreds of miles through a farming country without seeing a single old-style plow, a a hand-scythe, or a sickle in use. The ground is broken up by improved implements, the corn is dropped and covered by patent corn-planters, or the wheat drilled in by many tubed drills, or scattered broadcast by a machine adapted to that purpose. The crops are worked by horse hoes, cultivators.

and other machines, which leave little, if any, work for the hand-hoe; and the reaping, mowing, threshing and potato digging are all done by the best labor-saving machines. Even our favored climate will not enable us long to compete with such farming unless we adopt similar methods.

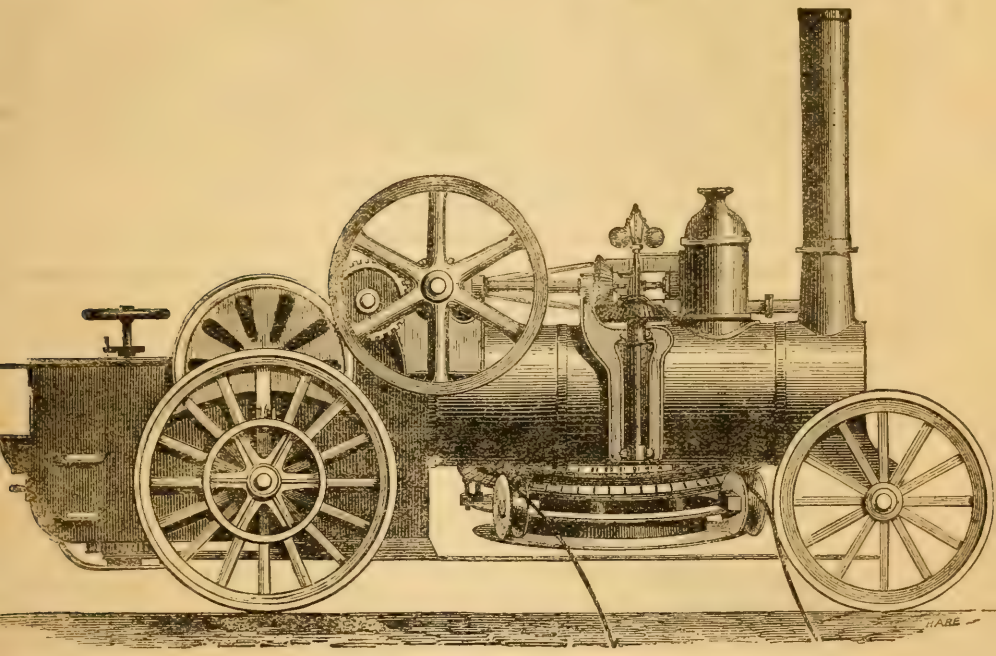


Fig. 2.—The Traction Steam Engine.

The Steam Plow is a Southern invention, having been patented in 1833 by E. C. Bellinger, of South Carolina. Numerous inventions for steam plowing have been brought before the public since that time, but it is a remarkable fact that the latest machines in use, both in Europe and America, are substantially those of Mr. Bellinger—Mr. Fowler, the great English manufacturer of machinery for steam cultivation, having simply improved upon the general plan. It is often the case that an invention made in one country is first brought into use in another. In this instance, a grand idea germinates in the brain of a South Carolina planter, is carried to England, has the results of European thought and experience engrafted upon it, comes back improved and practicalized to revolutionize the agriculture of the North and West, and, finally, reaches again the place of its birth as a foreign production—a "new-fangled notion" to be looked upon with distrust and suspicion, if not with hostility. But we anticipate a little. The steam plow has not reached us, but it is coming.

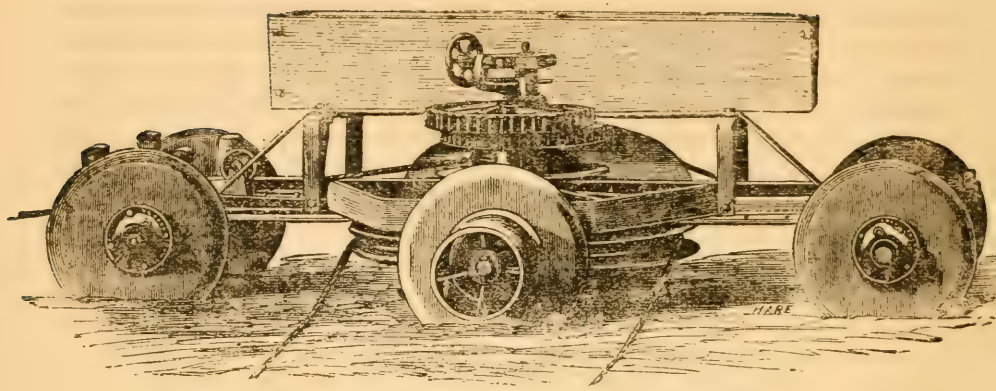


Fig. 3.—The Windlass Anchor.

The plan of Mr. Bellinger, commonly called *cable traction*, is simple and easily understood, the machinery being by no means complicated. At opposite sides of the field to be plowed are two steam engines on wheels, such as is represented in Fig 2, or a steam engine on one side of the field and a capstan anchor (Fig. 3) on the other. A gang plow, or rather two balanced gang plows, (Fig. 4) are pulled back and forth between them—a shuttlecock between two steam battledoors. The traction is obtained by means of a strong wire cable, attached to the plow and passed around the revolving drum, or windlass of the engine. Fig. 1 shows one of these plows in operation on a small field, only one engine being used. The engines, or engine and anchor, both move gradually forward along the headlands, as the plow traverses the space between them. The plows have from three to eight shares on each end, and, while working, each is alternately in the ground and the other in the air, the necessity for turning being thus avoided. Where the windlass anchor is used the implements are constructed with patent slack gear, which lengthens or shortens the ropes as the boundary of the field may require, and at the same time without any loss of power keeps both ropes sufficiently tight to prevent them from trailing on the ground, (if properly "portered.") Any class of implement may be used that can be fitted with "slack gear."

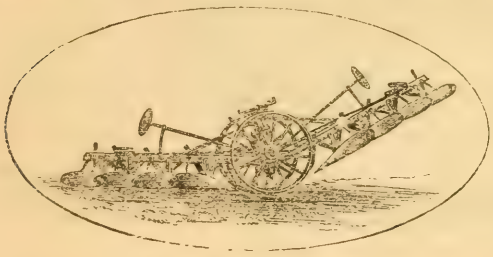


Fig. 4.—The Gang Plow.

At a late trial of one of these implements, operated by two engines, on the estate of Colonel Patterson, at Atsion, N. J., the plows moved at the speed of a hundred yards a minute, turning six furrows a foot each in width and eight inches in depth. Its average work, therefore, is twenty acres per day. The locomotives are snug machines, capable of being applied to many useful purposes independent of duty as steam plowers. A man rides on the plow as it

crosses the field. A digging machine may be had in connection with the plow, for use where roots or stones oppose obstacles to the progress of the shares. The quality of the work accomplished is not less wonderful than its rapidity. The steam-driven implement so tears and breaks up the land that it remains in a loose, rough state, enabling the atmosphere to act upon the *sub-soil* as well as the upper part of the staple, and pulverize the whole by degrees; thus more thoroughly preparing it for the reception of the seed than any other mechanical operation, however expensive. All treading being avoided, the rain and the roots of plants are allowed to penetrate the sub-soil without being intercepted by the indented path on which animals have trodden for years. An observer at the late trial in New Jersey pronounces it "a wonderful apparatus," and adds "it so triturates the stiffest soil that a Yankee might put it into bladders and vend it as a substitute for snuff."

It is stated that over three thousand of these plows are already at work in England, and at least two hundred in Egypt. In the United States, there are, so far as we know, but three sets of English steam plowing machinery in operation—one in Illinois, one in Louisiana, and the one already mentioned in New Jersey.

The steam plow imported into Louisiana is or was at work on the Magnolia Sugar Plantation, about forty miles below New Orleans. The following facts concerning it are extracted from the Report of the Department of Agriculture for 1867:

"The set consists of two fourteen-horse power double cylinder traction (or locomotive) engines, each having self-moving and reversing gear, water tanks, steerage, with road wheels twenty-two inches wide, winding drum, and patent, self-acting cooling gear, spuds, tools and tool boxes complete, and ready for cultivating the soil. There are also included eight hundred yards of steel wire rope, one six-furrow balance-wheeled plow, one seven-tine pulverizer or sub-soiler, balanced and on wheels.

"The entire machine complete cost in England £1,500. Each of the locomotives or traction engines weighs ten tons, without coal or water. The engines are driven to the roads or headlands, where they stand on opposite sides of the field, and haul those great balance-wheeled cultivators or plows back and forth at a speed of over four miles an hour, or faster than a man can walk.

"The engines, plows, and the entire steam plowing machinery are worked and managed with the greatest ease and facility, going over bridges and ditches, moving and turning as easily and speedily as a six-horse team.

"The old 'plantation hands' very soon learn how to run the machines, and, after a few weeks, are trusted with the entire management, being divided and placed as follows: one man to each engine, who keeps his machine in order, does his own firing, greasing, etc.; two go with the steam plow, one to steer and one to aid in case of stumps or obstructions, and one boy, with cart and team of three mules, hauls the coals and water for both engines. Each engine consumes seven barrels of coal for a day of ten hours. The coal costs in Louisiana, delivered on the land alongside of the levee, sixty-five cents per barrel.

"The usual task in England of a set of first-class steam plowing machinery is eight acres per day of ten hours. The sub-soiler or pulverizer will work over from twelve to fifteen acres per day, breaking, stirring, and tearing it

up from fifteen to eighteen inches deep. The cost of plowing in Louisiana, running fourteen inches deep through the toughest and most sticky soil ever seen by man, is about as follows, allowing for a sinking fund and interest upon first cost, about twenty per cent. per year for both items:

Labor of four men and one boy, per day	$5 00
Fourteen barrels of coal, at 65 cents	9 10
Use of water, cart, and three-mule team	2 50
Oil, cotton waste and gum packing	1 40
Current expenses per day	18 00
Add ten per cent. per year on the first cost, say $11,000, greenbacks, for wear and tear per day	5 00
Ten per cent. for interest on cost	5 00
	28 00

"This allowance is much too large; making the cost of each acre of land broken up and plowed fourteen inches deep, three dollars and fifty cents, not a very high price for such plowing."

Are we ready for the steam plow? Is it practicable to introduce it upon our cotton, rice and sugar plantations? Will it pay to use it here?

These are questions for which different individuals will, no doubt, find different answers, and which actual experiment alone will settle to the satisfaction of all.

Nowhere are labor-saving machinery, implements and methods of working more needed than here. The scarcity of labor necessitates economy in its use. Machinery enables us with a few men to perform the work which it requires many men without machinery to accomplish. Steam engines, which money will purchase any day, and which are subject to perfect control, can, to a large extent, be made to take the place of living machines of bone, muscle and nerve, of which no wealth can command an adequate supply and no power perfectly control; and it is here, if anywhere, that we need to secure this substitution of iron and steam for muscle and nerve.

In the second place, the level character of a large portion of the South and its freedom from rocks, adapts it admirably to culture by steam and other improved machinery and implements.

The obstacles to the immediate and general introduction of steam plowing machinery are, however, of a character not to be overlooked. In the first place, the lack of capital in the hands of our agriculturists renders it impossible for many of them individually to avail themselves of the benefits of expensive machinery of any kind; but this difficulty may be met, in many cases, by combinations such as clubs and joint-stock companies, formed for the special purpose. Threshing, reaping and mowing machines were first introduced in this way. A number would join in the purchase of a machine, put it into the hands of some person skilled in its use and take each his turn in being served. Thus the expense to each was much lessened. Now, as the engines used in steam plowing are, or may be, also adapted to almost every other kind of farm work, such as driving a cotton gin or a threshing machine,

sawing wood, grinding corn, pumping water, washing and churning, they need seldom be idle, and become far more profitable investments than if suitable for only one kind of work.

The pine stumps in most of our cotton fields, and the cypress roots in portions of our rice lands, present another serious obstacle not only to the steam plow, but also to other improved implements. Where they occur the *stump puller* should precede the sulky cultivator and the steam plow.

That steam cultivation has been made profitable in England, has been put beyond question. Why not here?

An English farmer gives the results of his experience in steam cultivation as follows:

"The operations by steam power, at a cost of £2 1s. per acre for four years, will work the land from ten to twelve inches deep, and keep it clean forever. The operations by horse power at a cost of £3 10s. per acre for four years will work the land five inches deep, but they will not keep it clean. As to my produce under steam culture, the total produce of four years under horse culture was eighty-five bushels of wheat and beans, or of other corn of equivalent weight per acre. The total produce of four years under steam cultivation is 140 bushels of wheat and beans per acre. Therefore the total increased produce is fifty-five bushels in four years, or an average of nearly fourteen bushels per acre per year. I shall use some artificial manure to keep up this production. A fold was used under horse culture. This shows that steam power can beat horse power in depth, cost and produce."

The principal positive advantages which may be secured by the use of steam in plowing, may be summed up as follows:

1. It will plow and cultivate deeply, cheaply and rapidly, leaving a deeper and mellower soil.

2. Its rapidity of execution enables the farmer to cultivate a larger area at exactly the time to secure the largest product.

3. It excites greater activity and promptitude among farmers in other matters, and leads to habits of system and order in all their operations.

4. It substitutes machine power, always attainable to any extent and perfectly manageable for manual labor, often unattainable to the needed extent, and never under perfect control.

5. It secures a more uniform seeding and ripening of the crops, as well as a heavier yield.

The introduction of the steam plow into our State, and into the South generally, is only a question of time. The sooner we prepare ourselves and our fields for its advent, the better. Forward with the stump pullers!

Not enough wheat will be raised this year in Great Britain to suffice for the consumption of the people by 75,000,000 bushels. To supply this deficiency will cost about $100,000,000 in gold.

"Pompey de corn's up." "De corn up! Why, I only planted it yesterday!" "I know dat, but the hogs got in last night and guv it a lift."

Concerning Agricultural Fairs.

We shall strike directly at the root of the practical thought intended to be developed. Though not connected with agriculture proximately, (all persons are either proximately or remotely,) we yield to none, we trust, in a hearty zeal for its interests, and to that end are desirous of aiding, substantially, in the promotion of the general weal. We have thought much about various eligible plans for holding fairs, their legitimate object at this time and their very great importance as viewed with relation thereto; and have more than once, to little purpose, urged our judgments to a definite decision of their rival merits. But we are persuaded at last that the way may be seen with sufficient distinctness to risk this opinion in print.

As we are yet upon the ill-defined border of the argument, it may be well to avail ourselves of the advantage of a correct and proper beginning, which presupposes the foresight of a distinct, definitive result, as in the outset intended to be accomplished. Let the question, then, in the first place, be put, what is the paramount object of fairs? and the answer is COMPETITION. But it may be well enough to remember that such, as it appears now to be, was not their legitimate object previous to the late war. And the mere fact of a dissimilarity of objects between such as were held then, and such as the present times require, although it hangs as yet by the slender thread of mere assertion, carries with it such intrinsic importance as to demand the first attention in its investigation.

For the singular direction given to the interest manifested by individuals of both sexes, and of all classes in these annual gatherings previous to the aforesaid event, much depended upon the condition and the institutions of the country, the presence of the wealthy being seduced by desire for novelty and change; that of such of the poor as resided sufficiently convenient to the ground to enable them to reach and remain upon it without expense, by a prurient curiosity; while that of individuals of doubtful standing, without ostensible means of living, and who are known as *habitues* and devotees of the gaming table, by the fruitful opportunity large miscellaneous meetings always afford for inveigling and rifling the unwary.

Of a certainty there was a legitimate object other than that of affording variety and amusement to one class, an insight into curious things to a second or victims to a third; but it may very well be doubted whether that object ever looked beyond the excitement induced by rivalry, or the happiness which success gave as a palm to victory; the pride very properly sustained by the coveted reputation of possessing the finest cow or the most beautiful horse in all the State; or, as in a few noble but rare exceptions, the desire of obscure genius to have his new and useful invention receive the approval which would fix forever beyond cavil or question his own precious thought there moulded into the hardened form of practicality. That their object ever extended to the development of the thews and sinews of society; that it ever designed

the promotion of agriculture as one grand occupation, world-wide in its importance; that it ever designed in reality the subordination of everything else to the material advancement singly of the useful, no one whom we have met ever contended. The premium lists invariably show that competition in matters appertaining to agriculture, was always between single acres; the object being not the improvement of agriculture, not a stimulant for the greatest aggregate product possible of the entire country, but, on the contrary, a mere experiment to gratify a temper of mind which did not essay to rise into majestic equality with the prodigious effort required in the work of reformation. All history shows that in times of great national prosperity, (which is merely aggregated individual prosperity,) the public mind is seized with a real apathy to progress; this being the point at which the current turns back, and a swift and steady deterioration in all the essentials of national greatness begins. The noblest types of character, the severest principles of virtue have always been developed among people whose situations, exposing their territory to the incursions of predatory war and their homes to ravage and pillage, have made them of warlike dispositions. In such times there is no opportunity for the growth of selfishness or the nurture of greed, for it is lucre alone that corrupts, while the desire for military renown is a pure and virtuous ambition, which puts the weal of the State by long odds above private interests. This Tacitus very clearly shows to have been the condition of the Germans in his pleasant account of the rural customs of that people, contained in his Germania. And such a condition was thought by the illustrious Athenian law-giver as a higher political blessing than great national wealth, with all the attendant vice and corruption which it engenders, as it is well known he took care to abolish money, at least made the circulating medium so unwieldy as completely to abolish extortion.

Taking leave of these preliminary matters, into which we have insensibly digressed, we now approach our *resumé*, with the remark that the fairs which the necessities of present society will call into existence, will have in view not only a very definitive, but a very considerable and a very useful object. That object is, through the incentive of competition, a thorough and radical change of the whole agricultural, and in fact industrial system, hitherto prevalent in the South. In arranging for this object, however, care must be taken that we do not clash with the prejudice of those through whom, and in whom alone, the change may be effectually wrought. We must not forget that persons not accustomed to think for themselves are naturally averse to innovation—or what to them is more properly iconoclasm; they cannot brook the thought of a departure from the well-beaten track in which their fathers achieved success, and in which their own infant feet were first taught to walk. Therefore, while we endeavor to win respect for the doctrine that now, since the abolition of slavery, the grand principle in agriculture should be one of concentration; that there is a true and wise economy in labor and time as well as in capital, which the thrifty and sensible will practice to very decided advantage, we must still remember that it will powerfully aid in the enforce-

ment of the principle to have the results of practical tests to back up our arguments, hence the necessity of going at once to work with the hand and the purse as well as the tongue and the pen.

There will be no great difficulty in showing that for a family of five persons, who are able to work, it is better to cultivate twenty acres of corn, five acres of cotton, one acre of lowland rice and one and a half acres potatoes, and other things in proportion in the highest possible manner, so as to realize the greatest possible product, than to cultivate one hundred acres of corn, thirty acres of cotton, twenty acres of rice, and so on in proportion, in a slovenly, indifferent manner, at an expenditure of two-thirds more labor and for a result of one-third or one-half less in the clear product.

Our next consideration will be the aid that may reasonably be expected from a thorough and judicious arrangement of annual fairs. Let the premium lists be arranged with a number of agricultural prizes, proportioned to the fulness of the treasury, both as to the amount of the prizes and their number, and let the contest be between entire crops produced by contestants, as follows: Fifty dollars for the maximum product on farms of ten acres corn, five acres cotton, one-half acre bottom rice, one-half acre sweet potatoes, and so on in proportion of other articles. Then let the same or a larger prize be offered for the greatest amount produced on a farm twice the size of the one given; and so on to the end of the prizes, taking special care that the arrangement suit the convenience of all classes of farmers in the State. Then let one great prize be set by for the farm whose appointments are most perfect, whose arrangement is most unique and convenient; which combines every advantage of neatness and skill of disposition, with perfection of contrivance; which is in fact in every particular and in every essential the model farm of the State; and let this preëminence amongst farms be decided by a capable and impartial committee, whose business it shall be to visit, in the year, all the farms which have been duly and properly entered upon the list for the prize. The State Agricultural Society, which must have the government of all matters appertaining to the State annual fairs, may devise some eligible plan, consistent with economy and justice, for the committee to itinerate the the State for the inspection of farms. But this same plan should likewise be adopted by subordinate fairs, whose jurisdiction might properly be about coëxtensive with our old districts, or larger as may be convenient; for by this means many who could not, under any circumstances, enter the lists for prizes at the State annual fair, may have the opportunity afforded them in subordinate fairs; and in this way the real object which annual fairs are intended to promote, may be most completely and effectually advanced.

Now, when it is understood that this plan of regulation and arrangement, by stimulating an emulous rivalry all over the State, and a praiseworthy desire on the part of all good planters to improve cultivation by the introduction of needful changes in the farm system, and to become speedily the friends and supporters of a healthful, intelligent and progressive reform, rooting out old errors and aiding friendlily with the purse and hand to develop the re-

sources of the country, thus laying the surest foundation of social independence; it will be seen that agricultural fairs have for this country an importance which can only be fairly estimated when we invoke the aid of figures to bring to view the great practical results, not yet indeed sustained by tried experiments, but easily reducible to a mathematical certainty.

To every true heart—every heart into which the bright sunshine of patriotic love has entered—there is something not merely gratifying but ennobling in the grand prospect of material development—of calling up as by the aid of magic the embryotic elements of social wealth—of turning these elements into the great channels of national enterprise. Here we enter a vast field for the exercise of every quality of talent, for conjuring up from the bosom of mother earth the material for the yet unshaped, and even inconceived inventions a rapidly advancing civilization will in no great while require. As much as the present state of facts is against the conclusion, we cannot altogether dismiss the belief that with the great improvements in morality and social wealth we expect a no distant future to bring on, will spring up a political and civil liberty worthy of the superior condition which produces it. In short, we believe that in all true progress the movement (if we may be excused the simile) is necessarily induced by an action similar to the rolling of a hoop; the prime motive is onward in one grand cycle unmeasured as eternity; but events gather themselves up for this grand momentum in epicycles; thus producing, amid the advanced civilization of to-day, much of the obsolete dogmatism, and gloomy superstition of ten, twenty or an hundred years ago. The present evil state of society is, therefore, natural enough; and the epicycle legitimately explains the ostensible paradox, to be found in the fact that we witness every day an actual retrogression in the affairs of society; in fact, that we live amid a state of things whose lighter features might have appeared comely enough among the old colonial settlements, but are totally inconsistent with the enlightened virtue and higher developments of the present day. Time will set it all right, however, and vindicate the consistency and truth of its onward movement. There can be no doubt that a controlling want with us is a virtuous, healthful and industrious working class, for such will exercise a great conservative influence upon the government—and such a class as a distinct and salient feature of the country we have never had here. When once fairly formed it may be counted upon as an imprescriptible institution. It is said that the yellow pine of the Southern forests, when once removed, is never again replaced, but is succeeded by a scrubby, inferior tree of scarcely any value, because devoid of the beautiful grain peculiar to the former, and is, besides, of especial liability to rot. Just so with a good, strong, virtuous laboring class; and to that source, when fairly established, we may reasonably look for the restoration of the constitutional hopes of America.

It is not a little interesting to inquire what causes, when properly combined, may contribute to the formation of such a class. Let it be conceded, as it must be, that all the important features of the individual character are

formed and colored by the teaching received, and the example set for imitation during childhood. A race of people, brought up to habits of industry and economy, with proper convictions of right, accustomed to conform their wants to principles of common sense, and educated from their very cradles to liberality of opinion and purse, are, without doubt, the strongest and safest palladium of free government.

Of course there would be a general outcry against the theory advanced in this paper. But it is a fact which cannot be too well attended, that very important results may, in the end, be effected, notwithstanding many should not only refuse to join in the enterprise, but should, also, do all in their power against it. It is, therefore, important that the reflection should be kept before the mind, that the work is not one to be hastily performed; but is one that, step by step, must meet with the rank opposition of ignorance and prejudice. Wisdom, indeed, would lead us to expect discouragement at once from many persons, for it is not within the power of the vulgar mind to foresee the real, practical good which fair ability with energy may compass; and unless they see the results talked of, as with their bodily eyes, produced as through the agency of a miracle, they can have no conception of the practicability of the undertaking. They despair of success by reason of the sheer superincumbent weight of the idea which cannot fairly enter their minds. Such opposition may be silenced only by the joint result of discipline and the success of practical tests. There is, therefore, no option left us but to meet the cavils of the vulgar on their own ground, and look for encouragement in the better sense and more generous behavior of our co-laborers in the work. We know that passions must subside—principles must be formed—new interests must be regulated; and though many things are now going wrong, there is a presiding conservatism in our intelligence, an abiding strength in our virtue which will assert its presence when the meretricious alliance of greed with ignorance and power, which holds together the "party of moral ideas" to-day, shall be remembered only among the accursed things of the past.

P. J. MALONE.

To Preserve Fence Posts.—"First, let them be well seasoned. Set the ground end in hot tar, and let it boil fifteen minutes. When cool, cover with coal-tar, thickened with ground slate or ground brick. The boiling stiffens the albumen and causes the pores to absorb tar. The coating prevents the action of moisture. But this treatment of green posts would do very little good, and perhaps mischief. A boiling in lime-water is also beneficial. Timber that is first water-logged and then well dried lasts well, because the water soaks out the acid that starts the decay."

The best test of good farming is this—that every successive crop is better than the one which preceded it, and that the profits of the farm labor are annually increasing. A farmer who can realize these prospects is doing well. His land and his purse are improving. And he should never hazard this certainty, and the comforts which it confers, for wild experiments, or hazardous speculation.

The Application of Manures.

AN ESSAY READ BEFORE THE DARLINGTON AGRICULTURAL SOCIETY, AUGUST 10TH, 1869.

There is no subject connected with our agriculture about which there exists a greater conflict of opinion than the proper application of manures. Isolated experiments often lead to opposite results, and have had the effect of involving the whole subject in obscurity and doubt. This is not strange, when we reflect upon the great variety of conditions involved—the manure itself, the soil, the season, all having an agency in controlling or modifying results. What is true of one manure in a particular soil, or season, may not be true of another, or even the same, under different circumstances.

However distasteful to the practical mind of the country may be the statement of abstract principles, I do not think the subject can be at all understood without some knowledge of those general laws which govern both soils and manures. I shall, therefore, consider the objects which we have in view, in the application of manures, and the principles upon which they depend, and then state very briefly what I regard as the best mode of applying each of the manures in common use, as based upon these principles and sustained by experience.

There are three leading objects which should be considered in the application of manures. 1st. So to apply the manure to preserve it, as far as possible, from loss, before or while it is being appropriated by the crop. 2d. So to apply it as to produce the highest action of the manure. 3d. So to apply it that this action may be felt at the proper time.

I consider first the application of manures with reference to their preservation. Manure, when placed in the soil, sustains loss from two causes: First, by the escape of its volatile matter into the atmosphere; and secondly, by being washed or leached through the soil. Very crude views are sometimes entertained by practical farmers of the extent and manner of this loss, from ignorance of the chemical character of manures, and the chemical and physical properties of soils. Manures are of two general characters: 1st Inorganic; such as lime, ashes, etc., which are simple elements, and contain no volatile matter. 2d. Organic; such as compost, stable manure, guano, etc., which, beside a small percentage of inorganic, contain a large proportion of gaseous matter, which, when released by decomposition, escapes into the atmosphere. It will be perceived that the loss to which these two classes of manures are subject is entirely different. The first is liable to no loss but that of being leached through the soil, while the second will lose more by the escape of its volatile and most valuable matter into the atmosphere. The extent to which a loss from these causes will take place, will depend both upon the soil and the season. Soils of fine texture, and abounding in vegetable matter, will absorb and retain a large proportion of volatile matter,

while barren and porous soils have little power of absorption. So, too, the loss from leaching will be modified by the character of the soil. Liebig tells us that little fertilizing matter is ever washed through a good soil. This is established by the pure condition of water passing off through underdrains. But while this is true of good soils, it is by no means true of poor and especially sandy soils; such possess little power of absorption. This distinction is important to us, as our soils are generally of this character. So, also, the relative extent to which the loss from these two causes will occur, will depend upon the character of the season. If this be wet, we may expect a greater loss from leaching; but if it be dry, more will result from evaporation. From this partial statement of principles, and regarding the application of manures *solely* with reference to their preservation, we may conclude: 1st. That inorganic manure should be applied upon or near the surface; 2d. That organic manure—all animal and vegetable matter—should be incorporated with the soil, whether more or less deeply will depend upon the nature of the soil, and its loss upon the character of the season; 3d. That highly concentrated or pulverized manures, such as commercial fertilizers, should not be applied to sandy soils, except in combination with vegetable matter or other absorbents; 4th. That while rough manure should be put out early, highly fermented or soluble manures should be applied as late as possible.

But I consider, secondly and chiefly, the application of manure with reference to the efficiency of its action. The idea is generally entertained that it makes little difference, as far as the effect is concerned, where we place our manures in the soil; the chief anxiety being to preserve it from loss, and hence the general habit of plowing under, more or less deeply, manures of every description. But experience of late has gone far to establish the fact that manures placed upon or near the surface are far more efficient in their action than when deeply buried in the soil. The practice of placing manures upon the surface has been adopted by many of the best practical farmers, and is sustained by the authority of Boussingault and others. Upon what principle does this depend? I think the chief explanation can be found in the physiology of plants. The analogy between the appropriation of food by animal and vegetable life is by no means perfect. In the one the appropriation is made direct, in the other through the agency of moisture; where moisture is absent the plant will perish, though surrounded by every element of food. This should teach us the importance of so placing our manures in the soil that the descending rains may pass through them, dissolving and bearing their fertilizing matter directly to the roots of our crops. We should remember that plants feed mostly near the surface, and for this reason, the foregoing very high authority (Boussingault) regards it as very important that the manure should be diffused through the superficial soil. Now it is evident that if the manure be deeply buried it will require not only a more thorough saturation of the soil to make it available to the plant, but at the same time the moisture which dissolves the manure will descend still further below the roots, and, upon some soils, never to return. This view is sus-

tained by the striking effects which attend the application of liquid manures. In China, where necessity imposes the highest production, and in the more intelligent and thrifty husbandry of Flanders, manure is used in scarcely any other form, and with results so striking as to challenge belief. It might be suggested that the application of organic manures at or near the surface was in conflict with a due regard to their preservation. But we should remember that the preservation of manure is an object subordinate to the efficiency of their action. We use manures, not to preserve them, but for their effect.

I consider, thirdly, the application of manures, with reference to the proper time of their action. Ordinarily, manure is used as food for crops, and, as such, the time at which we desire its action is throughout the entire period of growth, and especially at the time of fruiting. To effect this, it is obviously proper to diffuse the manure through the soil, either in the drill or broadcast, or if it be of a very volatile character, it should be applied at the latest period practicable. But manure is sometimes used as a stimulant, to impart an early and vigorous growth; for this purpose it should be applied in close proximity to the seed, and at the time of planting. Very remarkable results have sometimes followed its application in this way. When the drill machine was first introduced into England, it was found that comparatively a small quantity of manure drilled in with the seed was productive of better results than a much larger quantity applied in the usual way. This resort seemed for awhile to unsettle the whole theory of manuring. The idea was adopted that a larger quantity of manure had hitherto been used than was necessary, and that, consequently, a larger breadth of land might be manured than had formerly been done. But a more extended experience has led to the opinion, that manure thus applied did not owe its efficacy to the amount of plant food furnished, but to its early stimulating effect—thereby placing the plant in condition to appropriate the resources of the atmosphere and the soil. In this view it is evident that this mode of application must be limited to comparatively fertile soils, or to cold and heavy soils. We have seen illustrations of this truth in our own farming; upon strong and heavy soils, manuring corn in the hill at time of planting is generally productive of the best results, while upon thin soils it usually terminates in disappointment.

The foregoing are the leading objects which are to be considered in the application of manures. It will be perceived that these objects are often in conflict, while the principles upon which they depend are numerous and complicated. I will now state, briefly, what I regard as the best mode of using each of our common manures, which I think will be found to accord with the above stated objects and principles.

1. Stable Manure.—This, in my judgment, should be applied in the drill, under the bed, and as near the surface as other practical considerations will allow. When used in large quantities, and when results are required regardless of cost, it may be applied broadcast, but, ordinarily, a proper regard to its economy and the limited amount at our disposal, will confine us to the

drill. The only point upon which I take issue with the ordinary mode of applying this manure, is the depth at which it should be covered. This should be as shallow as possible, consistent with the safety of our stands.

2. Cotton Seed.—This, whether used for corn or cotton, should, generally, be applied in the manner above stated for stable manure. From the great facility with which it can be handled, this manure is subject to greater abuses than almost any other. The common mode of dropping it near the seed at time of planting, while upon rich lands will be attended by the best results, upon thin soils—by far the most numerous class with us—can only terminate in disappointment. So, too, the very common mode of dropping the seed around the base of the stalk after corn has somewhat advanced in its growth, is in direct conflict with the well known physiological law, that plants feed only at the extremities of their roots.

3. Guano.—From the great variety of considerations which enter into the question of the best mode of using this most active and volatile of all manures, it is impossible to lay down any general rule. The mode recommended by David Dickson, and which has been very generally adopted, combines more advantages than any other. The depth recommended by Mr. Dickson is in conflict with the theory which I have advocated, but it should be borne in mind that it makes little difference with this class of manures where we place them in the soil. From their extreme solubility, they soon rise by capillary action not only to the surface, but are diffused throughout the entire soil. In wet seasons, when capillary action is suspended, a very decided advantage will be found in a comparatively surface application. The very common mode of applying guano late in the season, is often attended with the best results, combining, as it does, economy in the use of the manure with effect at the proper time, but grave practical objections exists to its general adoption. It is always inconvenient, and sometimes injurious in its execution. During last season, a part of my own crop was more injured than benefited by a late application of guano. The furrow in which the manure was deposited having the effect of cutting the roots of the cotton, from which it did not recover, as no rain fell for some weeks afterwards. The combination of guano and plaster, as in the Dickson formula, probably attains the same ends sought by the late application, without any of the injurious effects which sometimes attend it. Upon very sandy soils, possessing, as they do, little absorbing power, guano should always be used in combination with vegetable matter; upon such soils I have known striking differences to result from the application of guano alone, and in combination with cotton seed.

4. Superphosphates.—These manures should, I think, be applied in the drill, with the seed. Less active than guano, they are not so soon exhausted, and, containing, in a pure state, no volatile element, there can exist no objection to a surface application. Even when combined with a small amount of animal matter, they may with propriety be used in this way. The animal matter will impart an early vigor, while the superphosphate, slower in its action, will form a reserve for the latter growth of the crop. Last year I

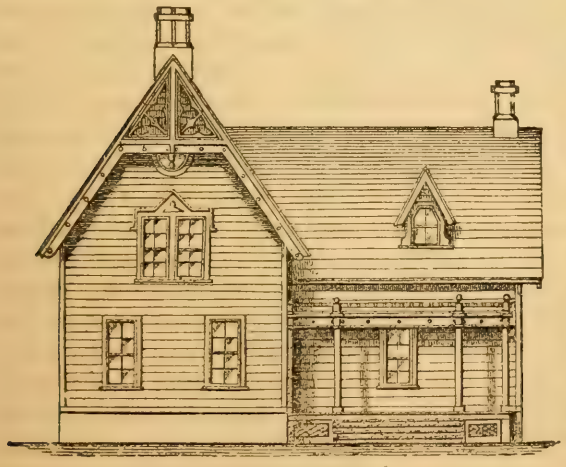
used, quite extensively, a very inferior brand of this manure. While that placed in the drill with the seed exhibited decided effects, that placed under the bed was never perceptible. EDWARD E. EVANS.

Rural Domestic Architecture.

The house of each epoch forms a chapter in the world's history. The wigwam of the savage expresses the rude life of the forest-born hunter; the tent of the nomad of the desert is no less significant of his habits and modes of existence—

> While on from plain to plain he leads his flocks,
> In search of clearer spring and fresher field.

So the log cabin, the feudal castle, the monastery, the grange, the manor-house, the villa, the farm-house, the cottage, has each its meaning.

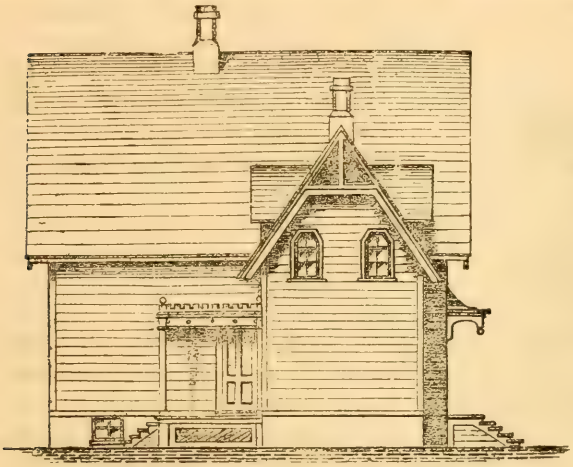


Front Elevation.

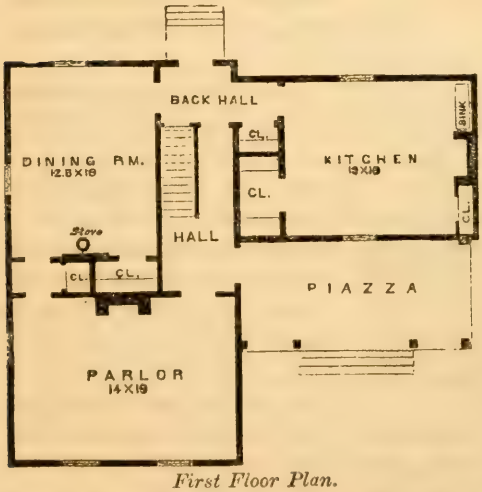
Domestic architecture is not merely capable of expressing the characters and customs of nations and epochs; individual diversities of opinion, feeling, taste and modes of life may be and are also clearly embodied in the human dwelling. Mere utilitarianism expresses itself in a square or oblong box-like house, with walls and roof built only to defend the inmates against cold and heat; windows intended for nothing but to admit the light and exclude the air; and chimneys constructed only to carry off the smoke. A love of ornament and show, unguided by either sound judgment or cultivated taste, give us all sorts of absurd and incongruous combinations of styles, build cottages in the form of villas and villas like castles of the middle

ages, and set all the laws of fitness and order at defiance. Good sense, a true love of the beautiful, refinement, culture and domestic habits are equally sure, under favorable circumstances, to make their impress upon the walls of the dwelling-house. Hospitality smiles in ample parlors; home virtues dwell in cosy fireside family rooms; intellectuality is seen in well-stocked libraries and a dignified love of leisure and repose in cool and spacious verandas.

Much of the character of every man, it is truly said, may be read in his house. If he has moulded its leading features from the foundation, it will give a clue to a large part of his character. If he has taken it from the hands of another, it will, in its internal details and use, show, at a glance, something of the daily thoughts and life of the family that inhabits it.

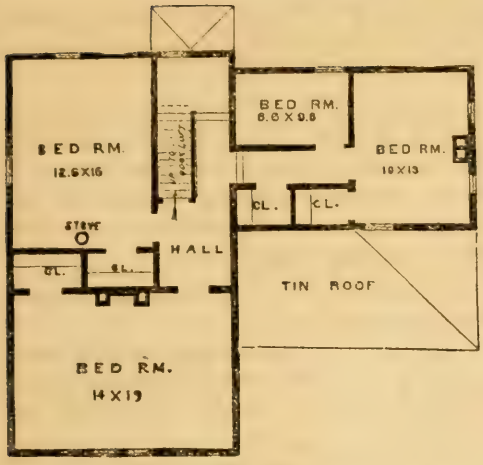


Side Elevation.



First Floor Plan.

Our design represents a small story-and-a-half gothic cottage. It would, of course, accommodate only a small family, and includes, as will be seen by reference to the plan, a kitchen under the same roof with the dwelling-rooms. Those who prefer to do so, can readily modify the plan, by making this the dining-room and building a separate kitchen; but under the present order of things, most small families of moderate means will, we think, prefer the arrangement here presented. If desirable, the two main bed-rooms on the second floor may communicate in the same way as the parlor and dining-room. We would put at least one more window in the parlor, as in our climate we cannot well have a too free circulation of air. A cottage of this design, with dormer windows, veranda (please don't call it a *piazza*, as our artist has done,) hood over the back door, and tracery on the gables can be built at from $1,500 to $2,000, according to the price of lumber and labor, perhaps in some places for less than the lowest of these figures.



Second Floor Plan.

The veranda is an essential feature of the Southern house. It should be broad, and, as a rule, extend the entire length of at least one side of the house. There should be ventilating hooded apertures in the roof of the veranda for the escape of the heated air which otherwise accumulates under it.

Entrance doors should furnish means of ventilation without being opened, either by means of side lights or fan lights hung on hinges. Every entrance should open into a hall, entry or lobby, to prevent the direct entrance of cold air in winter, and to secure privacy.

Does Deep Plowing Pay?

It seems that there are intelligent practical agriculturists who still have their doubts. A year or so ago, David Pettit, of New Jersey, wrote a letter to the American Institute Farmer's Club, New York, the professed object of which was "to demonstrate that deep plowing and sub-soiling are of doubtful utility." In the discussion which followed the reading of this letter, stories were told of Southern farmers who had ruined their lands by deep plowing. One of these cases, or a similar one, is thus narrated by a correspondent of the *Southern Cultivator:*

"Mr. Furse, of Barnwell County, South Carolina, had a field of good sandy land, on which his overseer undertook to make a crop. He put his plows in, breaking as deep as possible. A splendid crop was the result, but it is said that Furse's land was entirely ruined. The overseer had killed the hen that laid the golden egg, and bartered his land for a single crop. That man could not again get employment anywhere in that neighborhood."

The same writer presents another case of ruinous deep plowing as follows:

"Mr. A. S. Jones had a field of fine oak and hickory land, close soil, with clay sub-soil, near Herschman's Lake, on the Savannah River. He, being a gentleman of extensive information and ample fortune, resolved to introduce the innovation of deep plowing with sub-soiling. He broke up his land, with the most improved sub-soiler, to the depth of, perhaps, ten or twelve inches. There came on a wet spell of long duration; the ground was level; the rain beat, and the waters saturated it. Planting time came on, his neighbors were laying off and planting all around him, but never could that field be traversed again, during that spring, by horse or ox. It bogged out of sight! It was not planted at all, and tall saplings now sing their old-field symphonies above the luckless spot."

Well, the question came up again lately in the same American Institute Club, when Mr. Horace Greeley (better authority in agriculture than in politics) said:

"I am glad of this opportunity of saying that I have examined somewhat this season, and I have become convinced that the wickedness perpetrated in this room—the advice to plow shallow—has already cost this country a million bushels of corn. I had occasion to travel in the South not long ago, and in Virginia and in some parts of the Carolinas this cereal will not be a third of a full crop. This result, in my judgment, is owing entirely to shallow plowing. I saw thousands of acres that would not yield a single ear. They will tell you drouth did it; but this cannot be true, because, at intervals, in the same region, where the soil has been overlaid with wash from the hills, and where, owing to its porous nature, the roots could run down two or three feet, without reference to the depth to which the plowshare went, the growth was luxuriant, and the promise of full corn in the ear was all that could be desired."

Still more to the point is the fact, unknown to Mr. Greeley, perhaps, that Mr. David Dickson, in the midst of a region burned up by the drouth, has made, as he always does, an excellent crop of corn on his deeply plowed and sub-soiled land, and these facts but confirm the teachings of sound theory as well as of general experience.

We do not discredit the alleged adverse cases. Admitting their truth, however, they do not invalidate the principle of deep plowing. If a farmer has a field with a soil of only two or three inches in depth, and he puts in big plows and turns this thin soil under to the depth of eight or ten inches, and then plants, without manure, on the barren sub-soil thus turned up, he he will very naturally conclude that he has ruined his land by deep plowing; or if, as was probably the case with the field which Mr. Furse's overseer bankrupted, a piece of land has in it only a sufficient quantity of the elements of fertility to produce one good crop, and we, by a thorough and sufficiently deep preparation of the soil, enable the cotton or the corn we put upon it to appropriate (approximately) the whole, we may, if we like, call the land ruined; but is not this better than going over the land several years, getting small crops, and arriving at the same result in the end? Of course a heavy crop exhausts the soil more than a light one, and as deep plowing enables us to get heavy crops, it may be said to be an exhaustive process; but it must be borne in mind that deep plowing does something more than to enable the plants to get hold of the nutritive elements in the soil. It increases the capacity of the soil for absorbing the nutritive gases from the atmosphere and for receiving and retaining moisture.

Deep plowing is important and will pay; but it is not the sum of good farming by any means. There must be liberal manuring to make good, and more than good, the exhaustion of cropping, and there must be judicious cultivation. In some cases, too, there must be underdraining, as exemplified in the melancholy history of Mr. Jones' experiment in deep plowing, given by the *Cultivator* correspondent. And in regard to the deep plowing itself, a reasonable degree of judgment must be used, and the depth graduated so as

to suit the conditions of each case. No rule that we could give would apply to all cases, but the principle is universally applicable, and we are confident that the statement of Hon. Horace Capron, our excellent Commissioner of Agriculture, that "if the soil throughout the United States were cultivated one inch deeper, it would, in one year, add $150,000,000 to the wealth of the country," is not an exaggeration.

China Grass and the Ramie.

Fig. 1. A Ramie Plant of Three Months' Growth.

The genus *Bœhmeria*, in which both the China Grass proper, and the Ramie, are included, belongs to the nettle family, which is also allied to the hemp family; and some confusion has arisen on account of the confounding of the two species. The fact that the prepared fibre of both is known in commerce by the same name—China Grass—has helped to confirm the erroneous impression prevailing in this country that the two are identical. The true China Grass is known, botanically, as *Bœhmeria nivea* and the Ramie as *B. tenaccissima*. Mr. J. Bruckner, of New Orleans, La., who seems to be thoroughly informed on the subject, thus points out the difference between the two species:

"In general appearance, when growing, the plants closely resemble each other, so closely, in fact, that an inexperienced observer could scarcely detect a difference without close examination, but upon inspection, it will be seen that the leaves are a trifle smaller than those of Ramie; the outside is of the same color—dark green, white underneath, agreeing, in fact, in every particular, with the exception of the veins of the leaf, which are of a dull, blood color, while those of the Ramie are uniform with the body of the leaf. The stems of the *B. nivea* do not attain the height of Ramie, for the reason that they mature much sooner, and, developing more woody substance, produce a coarser fiber. The *B. nivea* is propagated from seed, and requires much more care and attention in propagating and cultivating."

The China Grass was brought to Washington from the Botanical Gardens in Jamaica in 1855, and was cultivated in the United States Botanical Gardens, and subsequently in the Experimental Garden of the Department of Agriculture. The seed is very small, and should be but lightly covered, the seed-bed kept moist, and covered from the fierce rays of the sun. The plant grows vigorously, but requires some winter protection in the climate of Washington.

Fig. 2. A Ramie Plant of Six Months' Growth.

The Ramie is a perennial plant of very rapid growth, and quite hardy as far north as the thirty-fifth parallel of latitude. It was introduced into the United States, in 1867, by Dr. Benito Roezl. It produces no generative seeds and can be propagated only from roots and layers, from which it can be multiplied with great rapidity, as is illustrated by the accompanying engravings, showing the plant at different stages of growth. Figure one represents

a plant of three months' growth; figure two, a plant of six months' growth. When the stems attain the height represented in figure two, they can be layered, thus securing an increase of roots nearly five hundred fold in one year.

It is said that in any of the Cotton States three harvests of the Ramie can be made annually. A machine has been invented for preparing the produce.

The fibre, when prepared for the spinner, is beautifully white, soft and glossy, closely resembling floss silk in appearance; it is much stronger than the best flax, and readily receives the most difficult dyes without injury to its strength or lustre. Specimens of it may be seen at our office.

We shall resume the subject in a future number, and give further facts concerning the plant, with directions for its culture. In the meantime, we hope to hear from several planters who have had the experience in its culture which we lack, and to whom we have written for information.

Results of High Culture.

Undoubtedly the best way to bring about the desired improvement in farming is to show, beyond a question, that it will pay. Practical tests are, generally, appreciated. Our theories may fail to attract attention, but cotton bales and corn in the crib speak for themselves.

Is high culture profitable? We might ask Mr. David Dickson, but we know, in advance, what his reply would be. Allow us to quote a few examples illustrative of high culture and its results.

Market gardening is merely concentrated agriculture—farming condensed. The operations, generally, are confined to from three to ten acres of land, though they are in isolated cases much more extensive. Manure is applied broadcoast at the rate of from fifty to a hundred tons per acre, or if a commercial fertilizer be used, from 1,000 to 2,000 pounds are applied. The soil, of course, is very deeply broken up and most thoroughly prepared. The results, as shown by actual experience in New Jersey, on soil originally light and sandy, and taking the average of ten years, may be thus put into figures:

RECEIPTS PER ACRE.

12,000	Early Cabbages, at 5 cents per head	$ 600
14,000	Lettuce, at 1 cent per head	140
30,000	Celery, at 2 cents per head	600
		$1,340
	Expenses	600
	Profit per acre	$740

Early Beets, Onions, Horseradish and other garden crops, give about the same results.

Our next item is from the note-book of a Southern small trucker. The figures are not so high as they might and should be made, but are encouraging.

"He marketed $100 worth of tomatoes from one-third of an acre; from a quarter acre of cantaloupes, fifty dollars; from a quarter of an acre in early cabbage, fifty dollars; from two and a quarter acres in turnips and tomatoes, $488 50; and from the fortieth of an acre in onions and peppers, twenty-five dollars—making a total of $711 50 from less than four acres of extremely light land."

The manuring in this case was, we presume, far from being up to the mark.

Leaving these small matters, as the large planter may consider them, we will draw an illustration or two from our great staple:

Some years since Dr. N. B. Cloud, of Alabama, reported a yield of about 6,000 pounds of seed cotton from an acre of pine upland, manured with 5,000 bushels of barnyard compost. This would be nearly 2,000 pounds of lint, worth at twenty-five cents per pound $500. The soil was naturally light.

David Dickson picked from four acres 16,800 pounds of seed cotton, the land being upland. He used 400 pounds of guano, with salt and plaster for turnips the preceding season, fed them off on the lot, and then in the spring, before planting, added one hundred pounds each of guano, dissolved bones and salt and fifty pounds of plaster per acre. The result, as we have seen, was 4,200 pounds of seed cotton per acre.

In 1867 the same gentleman, on a field of sixteen acres of fair pine land, which had been under the plow for *seventy years*, averaged two bales of cotton per acre, worth $200. The whole expense per acre, including manure, was thirty-two dollars and five cents. This, it should be borne in mind, was the season in which so many thousands were ruined by cotton growing. They did not practice high culture.

Mr. Geo. W. Gift, of Memphis, Tenn., in Agricultural Report for 1867, presents the outlines of an excellent system of what, speaking comparatively, may be called high culture:

"The exclusive system of cotton planting must give way to a mixed system of farming. Each and every farm must be made more than self-sustaining as regards provision crops, looking to cotton for the profits. The area of cultivation must be reduced; a thorough rotation of crops practiced, stock raised, and manures carefully saved, housed and composted. Deep, thorough, and careful tillage must succeed the present shallow and slovenly culture. When these conditions are fulfilled we shall become independent as regards our food crops, and the production of cotton will rapidly increase from year to year.

"To treat land so as to obtain the greatest possible crops would require a very considerable outlay of capital, which our people have not. But I insist that our lands may be brought up to the paying level by judicious rotation of crops, and by saving and utilizing the vast quantities of manures which now go utterly to waste.

"The rotation I would recommend is that of five fields: First, all the manure for cotton, the land to be thoroughly sub-soiled and properly tilled; second, corn after cotton, manured in the hill with ashes and such cotton

seeds as are not fed to stock; third, wheat after corn, to be seeded with red clover or mixed grasses, and allowed to wait its turn in the five years' shift. Returning, the clover sod to be broken in the fall, and the land thoroughly sub-soiled in the spring, manured and prepared for cotton, and so on as before. Under this system we may expect the greatest yield of all crops, and with the easiest cultivation. Crab grass, the cotton farmer's greatest enemy, perishes where the land is not cultivated continuously. Following grain and the grasses we find this pest exterminated. Cotton exhausting land but little, and the culture being 'clean,' we have every right to expect after it a bountiful corn crop, and thereafter good wheat and grass. I would not have more than twenty-five acres under this system to each reliable hand employed. From every acre we get food for stock. Cotton seeds, as oil cake or cooked, are of great value as food for cattle, reckoned in England, when decorticated, as equal, if not superior, to the richest grain. From the other crops we have corn and fodder, straw, bran and hay. Hence, under judicious management, with stock enough to consume the products of the place, the amount of manure for the cotton land would not fall short of thirty tons per acre per annum; enough to bring the crop up equal to that of Mr. Dickson's four-acre lot; or, we will say, ten bales of cotton to the hand; not an unusual production on the rich bottom lands of the Mississippi and Yazoo prior to the war. The following estimate of receipts and expenses for twenty-five acres may serve to further illustrate the system:

RECEIPTS.

10 bales Cotton, at $100	$1,000
300 bushels Corn, at 50 cents	150
125 bushels Wheat, at $2	250
10 tons Hay, at $20	200
Total receipts	$1,600

EXPENDITURES.

Wages and board of one hand	$250
Help at haymaking, cotton picking and harvest	60
Feed of team, two mules, per annum	125
Seeds, etc	40
Wear and tear and repairs	25
Total expenditures	$500
Net profits	$1,100

"According to this system we are sure of a living and some money. As we are going now we are pushed to get the former and have none of the latter. Before closing, I may say that this system is based upon the theory of reliable and intelligent labor, and ample protection for crops and stock."

Better Culture.—At a late meeting of the New York Farmer's Club, Mr. Fuller said: "I am firm in the faith that twenty-five per cent. of our agricultural labor is wasted. Why is this? Why run over twenty acres for a harvest that might be grown on a quarter of that area, or a half at most? Mr. Brown or Mr. Jones or Mr. Robinson, had better not attempt to make manure for ten acres answer for thirty; or four-inch plowing suffice where sixteen would be shallow enough."

Nut Growing.

Among the objects of cultivation, to which little or no attention has hitherto been given, but to which our climate is admirably adapted, are the various edible nuts, almost every species of which may be grown in the Southern States, from the shell-bark hickory to the pistachia.

Nuts always command a ready sale, are not perishable, and can be shipped any distance, and at almost any time, to suit the grower's convenience. The crop is a perfectly safe one, and would, probably, prove quite as profitable, to say the least, as that of peaches or grapes.

The Spanish chestnut, (French *marron*,) has been found to succeed finely here, delighting in our sandy soils. Mr. Wm. Summer, of Pomaria, writes as follows of this nut:

"The Spanish chestnut has been in bearing here for several years, producing annually never failing crops. At the season of the flowering of the chestnut and chinquapin, it produces first its clusters of sterile flowers, in long, cream-colored cylindrical catkins, followed by fertile flowers, two or three together, which, ripening in October, mature in fruit formed in burrs. The fruit is large and sweet, and delicious when roasted. In Spain, Italy and France, the roadsides are often bordered with these valuable trees, and in many portions of these countries they form no small portion of the food of the poor, boiled or ground into meal, and made into puddings, cakes and bread. The mountain sides are planted with these trees, and the little Savyoard, after singing in various parts of Europe, longs to return to his mountain home, to feast again upon the sweet chestnuts. Napoleon, with the object of improving Algeria, has had millions of these chestnuts planted there."

The Spanish chestnut forms a noble spreading tree, and should be introduced for ornament as well as for use. The nuts can readily be procured for planting.

Next to the Spanish chestnut in importance, as an object of extensive cultivation, is the Madeira nut or European walnut, (*Juglans Regia*,) some few trees of which are now growing and producing fine crops in various parts of the South. It is cultivated somewhat extensively in South America and in California. A single tree is estimated to produce, when fully grown, a thousand pounds of nuts—a quantity which would sell in this country for at least $200.

The pecan, a native of our own forests, (in some parts of the South,) is another valuable and easily grown nut. There are several varieties. The Louisiana pecan nut has a softer shell than that of Texas, and is generally preferred in market, though less rich. The pecan nut brings a high price in foreign markets.

To the foregoing may be added the filbert, the pistachia nut (*Pistachia vera*) and the Italian pine, (*Pinus pinea.*)

This last, although a native of Southern Europe, is said to withstand the winters as far north as Philadelphia. The nuts are not so large as the almond; in taste it resembles the English walnut, but is more tender and

buttery. The nuts, we believe, can be procured from Mr. Thorburn, seedsman, New York.

The following directions in regard to planting tree seeds generally, may be of service to our readers:

Some tree seeds, like the Madeira nut, the pecan and the filbert, will germinate, if kept dry, till the time of planting, but as a general rule it is necessary to keep them moist to ensure success. This is the case with those of the common chestnut, the oak, the cedar, the haw, the peach and the apple. To keep seeds moist, bury them in a moist place in the ground, but where water will not stand, or put them in a box of dirt, with holes in the bottom of the box, and water them sufficiently often to prevent them from getting dry. In January they may be planted, watering, if necessary, as they should in most cases, as nature indicates, be planted shallow. The black walnut and butternut may be planted as soon as they fall from the tree. Of the Spanish chestnuts, imported in the usual way, the greater portion will germinate, (if kept moist after they reach this country,) but to ensure the best results, they should be packed with moistened moss in air-tight cans, being put up as soon as gathered.

Persons having seeds of any of the nut-bearing trees we have mentioned to dispose of, will confer a favor by informing us of the fact. We shall be glad, also, to publish the results of any experiments which may have been made with these trees in the South.

Sow Wheat, Rye and Barley.

We cannot too strongly urge our readers to give more attention than most of them have been accustomed to give to the small grains. We have neglected these too much. Good wheat can be grown almost anywhere by the proper manuring and preparation of the land, and where this is impracticable, rye may be put in with a certainty of measurable success; and Southern rye is well known to be of a superior quality. In regard to manuring for the small grains, Dr. Lee says:

"Burnt lime, and salts of lime, such as the nitrate, sulphate and phosphate, are so useful and available in grain and grass culture, that I do not hesitate to urge their use in preparing ground for wheat, clover, meadows and pastures. Common salt, and all sea salts greatly strengthen weak soils, if used with lime. Our old fields generally lack true agricultural salts, which the ocean should be made to supply. It is full of the salt of the earth, which is fit, and only fit for the dung heap."

Read again the experiment of Colonel D. Wyatt Aiken, with barley and clover, narrated in our October number, and try to profit by it. Make also other experiments with the small grains. Drilling wheat, where practicable, should be tried. We are convinced that this is the best mode where the ground is sufficiently clear, and a machine can be had; but, be that as it may, sow wheat!

Do not omit to wash your seed wheat thoroughly in strong lime, to kill the smut-germs; or put it through the following process, which is said, on good authority, to be still more effective:

"Put your wheat, intended for sowing, in a pile on a smooth board floor, the evening before you are going to use it; then for each bushel take one ounce of blue vitriol, powdered, and one quart of boiling water; mix till dissolved; then pour it, boiling hot, gradually on the wheat, while another hand turns it over and thoroughly mixes it."

The need of diversifying our agriculture, the increasing demand for breadstuffs, the superior quality of our small grains, and the frequent failure of the Indian corn crop all indicate the importance of giving more prominence to the small grains in our system of agriculture.

The Tea Plant and its Culture.

It has long been known to all who have taken the pains to inform themselves on the subject, that the tea plant of China is perfectly adapted to the climate and soils of the Southern States, growing here with the greatest luxuriance, and producing a leaf of quite as good a quality as that produced in its native country. The illustration herewith presented, is a correct representation (from a photograph) of a sprig taken from a plant more than ten feet in height, now growing on the Middleton estate on Ashley River. This specimen was obtained in September, and presented both seeds and flower

buds, as shown in the engraving. The seeds were nearly ripe. The usual time of flowering is November. No doubt all the lands in the middle country of South Carolina and Georgia, now considered of comparatively little value for cotton or corn, would produce fine crops of tea, as it does not require a strong soil, and in China is rarely manured.

The ground is prepared for planting by being deeply dug or plowed. In China the lower slopes of the hills are considered best, and, for soil, a light, sandy loam is preferred; but we have seen it growing in Georgia and South Carolina in almost every soil and situation, and always thriving as luxuriantly as any native shrub. The plants may be set about five feet apart each way, giving 1,764 to the acre. When it is about eighteen inches high, the leading shoots should be pinched off to make it throw out more side shoots. It will flower the second year from the seed, and the third year the leaves may be gathered for use. About ten pounds to the acre is produced in China the third year, and sometimes 300 on the tenth, when the product may be considered at its maximum. In Georgia we are told that it has been gathered at the rate of 441 pounds to the acre from plants only five years old. This at fifty cents per pound, (and it would bring much more at present,) would amount to $220 50 per acre. The cost of production we have, at present, no means of ascertaining with any approximation to exactness. Careful experiments should be made to determine this, for the grand practical question is—"Will it pay?"

Chinese Agriculture.

Small cultivators in China often employ spade husbandry, and it is impossible not to admire the neat condition of their fields, from which they remove every weed with the most invincible patience. The ground must be bad and sterile indeed if they cannot succeed in making it produce something. In places too dry for the culture of rice, they sow the sweet potato, hemp, and cotton; and if there is a corner quite unproductive, they plant in it some useful trees, the mulberry, the tallow tree, or at least some pines, for turpentine. The Chinese farmer is incredibly anxious about his harvest; if he dreads that a violent wind may shake out the grains of rice by lashing the ears one against another, he binds several stocks together into a kind of sheaf, so as to make them afford each other mutual support, and check the ravages of the wind. In irrigation also they display great industry, often carrying the water through bamboo tubes up the sides of the mountains, which are cut into terraces, and cultivated to the very top. They have a thousand contrivances in times of drouth, to spread the waters of rivulets and ponds over their fields, and enable them to flow off again when the inundation is too great. They make use chiefly of chain pumps, which they put in motion with their feet, and which send the water from one reservoir to another with great rapidity. Sometimes they fix at the edges of streams large wheels of extreme lightness, which a very slight current is sufficient to turn. These wheels are most ingeniously constructed, and surrounded with vessels that take up the water from the rivulets, and pour it into large wooden tanks, whence it afterward runs through little rills over the fields.

Many provinces are so fertile, and cultivated with so much care and skill, that three harvests a year are regularly gathered. When the first is pretty well advanced, they sow the second in the intervals between the ridges, so that there are two different crops in the same field at the same time. All the cereals known in Europe are found in China, and even exhibit varieties not found elsewhere. In the north, barley and wheat are more especially cultivated; and in the south, rice, which is the principal food of the lower classes, and the basis of aliment for all. It is, however, a mistake to suppose that throughout the Empire the Chinese live chiefly on rice; in the north and west it is not more used than in France. It is only seen on the tables of the rich, and then mostly on grand occasions. Wheat, buckwheat, barley, Indian corn, millet, form the daily food of the people, except in the province of Kansou, where bread is made precisely as in Europe; everywhere else they spoil the wheaten flour, eating it in the state of unfermented, half-done paste, sometimes in the shape of a bun, sometimes pulled out in ribbons like macaroni. Little loaves about the size of a man's fist are occasionally made, but merely boiled in steam.

Economy of Manures.

At the Leicester meeting of the Royal Agricultural Society, Moule's Earth-closet formed a very attractive and popular affair during the whole period of the exhibition.

The principle of Moule's Earth-closet is to utilize the solid and liquid drippings net, or before they have been wasted in the atmosphere or mixed with rain water. The proposition is a very old one; it was a great favorite with the agricultural writers of the last century, and is, in not a few cases, actually being called into effect by small farmers who husband everything with the greatest care, and who have, generally, plenty of time on hand to do so. The practice is simple and carried out as follows:

Where two or three cows are kept very little straw is needed to keep them clean and give them a comfortable bed under attentive management, and with such we have seen dung pits with hardly a straw to be seen in them, the compound being similar to the produce of a Moule's Earth-closet. A few cartloads of dry earth, peat, mould, and absorbent materials of this kind are collected during summer and stored up somewhere near at hand. We have seen it behind the cows, and wheeled in with a barrow by the cottager. The ashes from the cottage fire are added and used daily when the cows are tied up. The cow-house is cleaned out morning and evening in the usual way, and the moment this is done a few spadesful of earth are carefully spread behind to absorb the liquid. There is a small cesspool to catch anything that escapes, but very little is allowed to flow into it. The cesspool is cleaned out daily. It should rather be termed the manure-making trough than a cesspool; for every time the cottager enters, the solid fæces and earth that has absorbed its maximum of liquid are carefully swept into it, and then thoroughly incorporated with the earth, and a little fresh earth spread behind the cows again. The practice is thus more cleanly and free from smell than the common one. And the extra labor is less than some may imagine, and is fully repaid by the results, as the manure possesses a very high value. Outside, the dunghill is surrounded with a low mound or dyke of earth to turn off rain water, and prevent the cows trampling upon it; and when the privy, poultry-house and piggery are cleaned out, their contents are spread over the cow dung; and before use the dunghill is turned in the usual way, the whole being thus mixed together.—*The Gardener's Chronicle.*

More About my Clover Experiment.

Mr. Editor: The excessively dry summer through which we have just passed, suggests the propriety of a still further report of my clover experiment.

In your October number I report that my second growth of clover was knee high, and very luxuriant on the 22d June. Up to that time we had had cool weather, with an abundance of rain. Subsequently no rain fell till the 24th July, when we had a good plow "season," and from that date to the 18th September, the weather was hot, dry and windy. By the 1st September my beautiful clover patch had turned black, and seemed dry enough to burn. That day my cattle, and sheep, and mules were turned upon it, and there kept until scarcely a vestige of clover was left.

On the 25th September I examined the lot carefully, and could not find a sprig of living clover. I despaired of the crop, and had concluded that our summers were too dry, long and hot for the growth of clover. Much to my gratification, however, Mr. Editor, (being induced to visit the patch this morning, 12th October, from its green appearance,) I find the clover has sprung up beautifully over the larger half of the patch, and will, doubtless, next spring yield as abundant harvest as it did last spring. Had the drouth of the past summer entirely killed the clover, I would have felt amply repaid for the trouble and expense by the single mowing.

I, therefore, again urge upon our farmers and planters to sow clover. Sow now in November. If a stand is not secured, or it is winter killed, sow again in February. I have a field of ten acres now looking beautifully, that once seemed totally destroyed by the drouth.

D. WYATT AIKEN.

Cokesbury, S. C., October 12th, 1869

Dr. N. B. Cloud's System of Cotton Culture.

Dr. N. B. Cloud, of Montgomery, Ala., contributed to the Agricultural Report, for 1866, a paper on Cotton Culture, based on an experience of more than a quarter of a century. His views are certainly worthy of the most careful consideration, and we feel that we shall be conferring a benefit upon our readers by giving here the substance of his system, as stated and illustrated by himself:

"As early as 1840 I saw the fallacy and destructive effect on the soil of the country of the common system of cotton culture; and at that time I instituted and commenced putting in practical operation a series of experiments founded upon philosophical principles: first, in the preparation and artificial fertilization of the soil; and secondly, in the subsequent culture of the cotton plant. In 1842, with the disadvantages of slave labor, while this system was

yet crude and not fully perfected, I grew upon a single acre of thin or poor (naturally) sandy pine land nearly 6,000 pounds of seed cotton. This crop was grown by first applying a heavy dressing of good compost manure (barnyard) broadcast on the land, which was then laid off in five feet rows and bedded out with a good turning plow very deep.

"The position of each plant in these rows or beds was spaced exactly three feet apart, and a half gallon, or spadeful, of good compost manure deposited in each hill or position to be occupied by the plant. On the 10th day of April the seed was planted, after being first rolled in ashes, by dropping half a dozen in each place. The only difficulty here, and it was a serious one, the seed being placed in immediate contact with the manure, was the destruction of the vitality of many seeds while vegetating, and I obtained a bad stand at first; but by a quick perception of the difficulty and determined perseverance, I very soon obtained a perfect stand. The culture consisted of one light plowing, while the plants were yet young, with a common shovel plow, and afterwards entirely with the weed hoe and a sweep running very shallow. Subsequently, and in the perfection of the system, I have abandoned placing my manure in the hill, but apply it broadcast entirely, which secures a good stand at first planting.

"Here you have a brief, yet plain and simple statement in detail of the mechanical and operative manual labor process by which this new and improved system of cotton culture is conducted in the field. The philosophy and science upon which the system is based, I shall show to be equally plain and simple, and easily to be comprehended by any laborer of good judgment and ordinary intelligence.

"This may be first stated in brief previous to illustration. A farmer desires to produce upon a given area of ordinary common cotton land, say one or more acres, two or more bales of cotton to the acre. It is first necessary to incorporate with the soil a sufficient quantity of phosphoric acid in a soluble form, which the cotton plants may take up from the soil and assimilate into cotton seed, bearing the proportionate quantity of lint (cotton) for the desired bale or bales. This is conveniently had in good barnyard compost or a good and genuine article of superphosphate of lime.

"The illustration here is more satisfactory by taking a practical example. For instance, an intelligent farmer or planter, with his family located on his own little farm, or on a leased one, proposes to raise five bales of cotton, weighing 500 pounds each, the next year; this he intends to do on five acres of ordinary cotton land. His intelligence and judgment prompt him first to lay his level on this little field and bring his cotton rows to a horizontal. That same intelligence teaches him that the elements of plant food for five bales of cotton, do not exist in a soluble form in the soil of his five-acre field. What then? He has already prepared, in and from his stock yards and stables, 500 bushels of good compost manure for each acre, which any planter may do at two cents per bushel; if he has it not already prepared, he purchases one ton of superphosphate, pure and genuine, which he uses instead of the home-made compost. This is hauled out and spread uniformly over the soil, and then with a two-horse 'Brinley Eagle,' or some other good turning plow, he beds out his rows deep and thoroughly, intimately incorporating this fertilization or plant food with the soil, at the same time effecting the proper and necessary pulverization. This beautiful process accomplished, his five acres of ordinary cotton land become the repository of the available elements of five bales of cotton. At the proper time, between the first and fifteenth of April, he plants his cotton seed; it now becomes necessary that the planter exercise his mechanical skill and judgment in the operation of planting; he is satisfied that he has stored in the soil of this field the crude

elements of five bales of cotton, which field, before being fertilized, under the ordinary system of culture, might have produced but 250 to 300 pounds of seed cotton per acre. Now to secure five bales of cotton from it, a certain number of plants must be had standing on it in an even and uniform relation to each other; in other words, this being the first year of the shift or rotation, (this system embracing a beautiful and most profitable method of rotation of crops, as was successfully practiced by myself,) a bale of cotton only is intended to be had from each acre. For this end his rows are laid four feet wide, and the seed planted by spacer (compass) or seed planter thirty inches apart on the row. This gives him 4,368 cotton plants to each acre, taking seventy yards square as the acre. Thus he has on each superficial square of ten feet throughout each acre a cotton plant, thereby securing to each plant its natural (pyramidal) form and continuous healthy growth to perfect maturity; hence there is here no crowding of the plants, nor is there any space unoccupied. And here allow me to remark, emphatically, that this natural (pyramidal) form of the plant is absolutely essential to its perfect maturity. It is not possible for this uniformity and perfect stand of plants to be had by any other mode or system of culture yet devised.

"Another short paragraph will simplify this illustration. Take, for instance, an acre of common cotton land anywhere in the cotton region proper, seeding it with wheat, and give it the necessary fertilization and culture for the production of 1,800 pounds of grain, (30 bushels,) a result easily attainable. Then take an adjoining acre of the same character of land, with the same fertilization, and plant it with cotton seed, cultivated in all respects according to this improved system, and it will produce the first year 1,500 to 1,800 pounds of cotton seed; with this important addition, that from the atmosphere the cotton plant clothes the seed by assimilating its carbonic acid with 500 pounds of snow-white lint or cotton.

"Here we have an improved system of cotton culture, practical and certain in its results, entirely adapted in every operation to 'labor-saving implements and machinery.' The land may be thoroughly plowed with 'gang plows,' the seed dropped and covered at regular distances apart in the rows by seed planters, when all the subsequent work in its culture is just such as the intelligent gardener applies to his enriched soil in growing his superior vegetables. This system of cotton culture commends itself to intelligent laborers and their families; its various operations are comparatively light, (five acres to the hand.) Then again its highest recommendation consists in its permanent improvement of the soil and the bountiful crops of grain it secures to the planter. This five acres, after the cotton is picked off, has returned to the soil the leaves of the cotton plant, the burrs, the stalks and the seed, except three to four bushels for planting other five acres the next year.

"The rows being laid level, neither the enriched soil, nor the debris of the cotton plant returned as above to the field, can be washed off by the rains. This five acres the second year is planted in corn, which yields readily, of an ordinary season, forty bushels of corn per acre, or 200 bushels to the hand.

"The third year it is seeded to wheat, rye, oats, or any small grain crop the farmer may desire. With a light dressing of plaster or superphosphate, (the latter preferable,) an entirely remunerating yield is obtained.

"The fourth year it lies in grass fallow, to be disposed of through the season as the interest of the farmer may require."

A TRAVELLER in England observed a man at work, and seeing he was taking it remarkably easy, remarked: "My friend, you don't appear to sweat any." "Why no, master, six shillings a week ain't sweating wages."

Department of Horticulture and Rural Art.

Raspberries for the South.

American Improved.

The impression very generally prevails that the raspberry cannot be successfully grown in the South. This is an error, and, like many other errors, has grown out of a too hasty generalization. It is true, that certain species of the raspberry generally fail in our climate. As a rule, it is useless to plant here the different varieties of either the American red raspberry, (*Rubus stringosus,*) or the European raspberry, (*R. Idæus.*) The Philadelphia, the Clarke and the Hornet may prove partial exceptions. Turning to the American Black Cap family, (*R. occidentalis,*) however, we find a berry as well, if not better suited to our climate and soils than to those of the North.

While in the more Northern States there is some difficulty in getting a raspberry that will stand the winter, here the heat and drouth of summer prove fatal to most of the varieties considered most desirable at the North; but the Black Caps succeed admirably with us, and are productive and excellent. Those who have tried raspberries and found them a failure, have, doubtless, either got the wrong sort, or have badly neglected or abused their plants, and thus thrown discredit upon the culture.

VARIETIES OF THE BLACK CAP.

The common American Black Cap grows wild in various parts of the United States. Fruit, medium; oval; black, with a bloom; sweet; pleasant flavored; not juicy. It has been cultivated to a considerable extent, and with success, but is now giving place to improved varieties of the same species, among the best of which are the following:

1. *American Improved.*—This variety, also known as *Doolittle's Black Cap*, is very productive and hardy, and has a larger and better fruit than the common sort. The plant is extremely thorny, which is the greatest objection to it.

2. *Davison's Thornless.*—A new variety from Western New York; has the advantage of being *nearly* destitute of thorns. The fruit is about the same

size as that of the American Improved, sweet and fine flavored. It is the earliest variety of its class. It is not very productive. We have not tested it, but have little doubt of its adaptation to our climate, as all Black Caps, so far as we know, succeed here.

3. *Seneca.*—This is another of Mr. Doolittle's varieties, and is said to be a plant of vigorous growth and wonderfully productive. It has numerous strong thorns.

4. *Large Miami.*—There has been a good deal of a muddle about this variety, or rather about its true name. Its value, we think, can hardly be called in question. The name we have given is the one by which it is recognized by the American Pomological Society, but it is being extensively advertised under the name *Mammoth Cluster*. *McCormick* is another synonyme. "It is a very large and fine sort, ripening a few days later than the Seneca. The berry is not so intensely black as some of the other varieties, and the bloom is more dense. The quality of the fruit is excellent, and the plants vigorous and productive."

Any of these sorts will be pretty sure to give entire satisfaction in our climate if properly cultivated.

RED RASPBERRIES.

Of the red raspberries, we have already, in a previous number, mentioned the Philadelphia, (a purple cane, and, perhaps, only a variety of the *Rubus occidentalis*,) as promising. The following should, also, be tested here, as it is very desirable to find at least one or two varieties of the *Rubus stringosus* or *R. Idœus* that can be grown in the South, for it must be conceded that some of them are far superior to the best of the Black Caps.

Clarke.

1. *Clarke.*—The Clarke is a new variety of the European species, (*Rubus Idœus*,) but of American origin. The fruit is of a bright crimson color, and of the best quality, and the plant a vigorous grower. It endures the heat well in the sandy soils of New Jersey, and there is hope that it may be successfully grown further South.

2. *Hornet.*—A French variety of such excellent quality and so great beauty that we shall try it here, with only slight hope, however, of any great success. The fruit is very large and handsome.

3. *Naomi.*—This is another sort, which tempts us greatly. It is of the foreign class, but originated from seed in Ohio. The fruit is very large, of a bright red color, and sprightly, rich and delicious flavor. We are not aware

that it has been tested here, and the chances are against its success, but we are inclined to try a few plants.

PROPAGATION OF THE RASPBERRY.

Hornet.

Most varieties of the raspberry in cultivation produce suckers from the roots, and after a plantation is once under way, plenty of new plants can be had for future plantings. In such cases, also, cuttings of the roots from two to three inches long may be planted in good, rich soil, and will generally produce fine plants. The Black Caps also propagate themselves by layers—that is, the tips of the canes, bending over and reaching the ground, become covered with soil, take root and form new plants. Nature may be assisted in this process by covering a foot or more of the cane in the summer, when roots will be thrown out from every part, and when taken up and separated, each bud will become a new plant.

SOIL AND CULTIVATION.

The Black Cap raspberries will grow on almost any kind of soil, but a sandy loam suits them best. The other kinds, both native and foreign, require a deep, rich and rather moist soil, such as a heavy loam or clay. In either case the preparation must be thorough, and the manuring liberal. Such manures as we have recommended for the strawberry are also well adapted to this fruit, but a larger proportion of stable manure may be safely used. The north side of a fence or building, where the plants can get the benefit of the morning sun, is a good place to plant. The rows should be from four to six feet apart, and the plants from two to four feet apart in the rows—the stronger growing varieties needing more room than the less vigorous kinds. Set the plants no deeper in the earth than they were before removal. One

Naomi.

year old plants are the best for transplanting in all cases. At the time of planting, cut the canes down to within from three to six inches of the ground, as they should not be permitted to fruit the first year. Of the smaller growing sorts two or three plants may be set in each hill, a few inches apart, if the hill system of planting be adopted.

Raspberries may be planted any time during the fall and winter, but we consider the present month the most favorable time, especially for the Black Cap varieties. The ground must be kept free from weeds, and on the approach of hot weather heavily mulched. The plants will need no support the first season. After that, a wire or other trellis for each row, or a hoop, supported by three stakes for each hill, should be provided, at least for the Black Caps. The old wood (the fruiting canes of the previous season) should be carefully cut away during the winter; also all the young, weak shoots. The plants will produce a good crop the second year, and a better one the third, and may be kept many years in bearing. The yield per acre is nearly, if not quite, as great as that of the strawberry.

How to Plant Strawberries.

In this climate, strawberries may be planted at any time, from September 1st to March 1st, with different degrees of success, but we think November the most favorable season, and shall therefore now offer some brief hints, drawn from experience in their cultivation, with special reference to planting.

THE BEST SITUATION.

Where a choice of situation is permitted, choose, if possible, a rather low and moist (but not wet) piece of ground, bordering on a stream of water, and having a slight inclination toward it. These conditions favor drainage, and facilitate watering, if that should be required.

SOIL AND ITS PREPARATION.

A deep, rich, sandy loam is, all things considered, the best for most of the varieties in general cultivation, but almost any soil, from the lightest sand to the stiffest clay, may be brought into a condition to produce excellent crops. Whatever the character of the soil, it must have *depth*. This may be considered as an absolute essential, and if naturally lacking, must be supplied by artificial means.

In all cases the ground set apart for a strawberry bed should be *deeply and thoroughly prepared*—not broken up merely, but well pulverized. Where a large patch or field is to be planted, this may be done by plowing, cross-plowing and harrowing. If the soil be not naturally deep and friable, sub-soiling to the depth of fifteen or sixteen inches should be resorted to. In the garden the ground should be prepared with the spade, or, what is better, the spading-fork, and worked over till free from lumps.

THE BEST MANURES.

Northern writers on strawberry culture recommend heavy manuring with stable manure Their advice in this, as well as in several other particulars, becomes erroneous and unsafe, when applied to strawberry growing in our hot, dry climate. Here very little stable manure should be used at the time of planting, and that little must be well rotted and thoroughly mixed with humus or vegetable matter. If the soil be naturally very poor it should have been well enriched the previous season by the application of animal manures. Leaf-mold from the woods, or the well rotted refuse which should accumulate in the garden compost heap, with wood ashes, at the rate of a bushel or more, to the load, added in the heap and thoroughly mixed, is excellent. Swamp muck, dug out the previous season, and frequently stirred, may be composted with one-fourth of its bulk of stable manure, and one or two bushels of ashes to the load, and will do nearly as well on light soils. On heavy, cold soils a larger proportion of stable manure is allowable. The objections to animal manures in our climate, and especially on our prevailing sandy soils, are: first, that they promote a more luxuriant growth of vines than is consistent with the most prolific fruitage, or the highest quality of the berry; and second, that the liability to injury from drouth is increased by their application.

The quantity of manure to be applied will depend partly upon the previous condition of the land, and partly upon the variety of strawberry cultivated; some, as indicated in our October number, under the head of "Strawberries: Old and New," requiring a more highly enriched soil than others. For Victoria and Triomph de Gand you can hardly manure too much. Wilson and Longworth's Prolific need less manure.

The fertilizing materials should be dug or plowed in, and thoroughly incorporated with the soil, as the roots of the plant soon fill the whole bed.

LAYING OFF AND PLANTING.

In field culture, or where a horse or mule and a cultivator are to be used in working the crop, the rows should be three feet apart. Lay them off with a shovel plow, running very lightly, so as to form shallow trenches,—say from an inch to an inch and a half in depth, and one foot in breadth, following with a hoe to make them even and smooth. For garden culture make, with a light hoe, similar trenches two feet apart. This arrangement not only gives the plants the full benefit of the rains that may fall or the waterings that may be given them,—an important point, especially on our sandy soils; but it has other advantages, as will appear in the sequel.

The plants should be from runners of the same season's growth, well rooted and vigorous. Remove the dead leaves and lay out the plants (in the shade) in small bunches with the roots together. Now, having prepared in a suitable vessel a batter composed of equal parts of fresh cow-dung, vegetable mold and wood-ashes of such consistency as to adhere to them, dip the roots of your plants—each small bundle by itself—in it in such a way as to thoroughly coat them with the mud. This is called "puddling" or "grouting." They are now ready for planting.

Some writers lay great stress upon the supposed importance of carefully spreading out the roots, so that when planted they shall be as nearly as possible in their natural position. When planting on a large scale this is utterly impracticable, and we do not think it makes much difference. In planting trees, grape vines, or other plants whose roots are more permanent, we would insist upon this as strenuously as any one, but we have observed that in whatever way the strawberry may be planted, it soon puts out new roots on every side when the old ones decay and drop off, so that whether these old roots be spread out into their natural position or crowded in the form of a pig's tail into a round hole, is a matter of comparatively little consequence; so having grouted our plants as described, we make deep holes with a dibble, in the centre of the trench or shallow furrow, insert the roots up to the crown of the plant and with the blunt end of the stick press the earth about them, being careful that the operation shall leave no cavity at the bottom of the hole. In this way they can be very rapidly planted; but to work to the best advantage, three hands are required—one to make the holes, one to drop the plants, and the third to plant them. Thus planted (the plants being fresh and in a good condition) they will require no watering, unless the ground be very dry; a cloudy day, however, should, if possible, be selected for planting.

The distance apart of the plants in the rows may vary with the richness of the soil, the variety planted, and the kind of cultivation to be adopted, but from twelve to fifteen inches may be considered a good general rule.

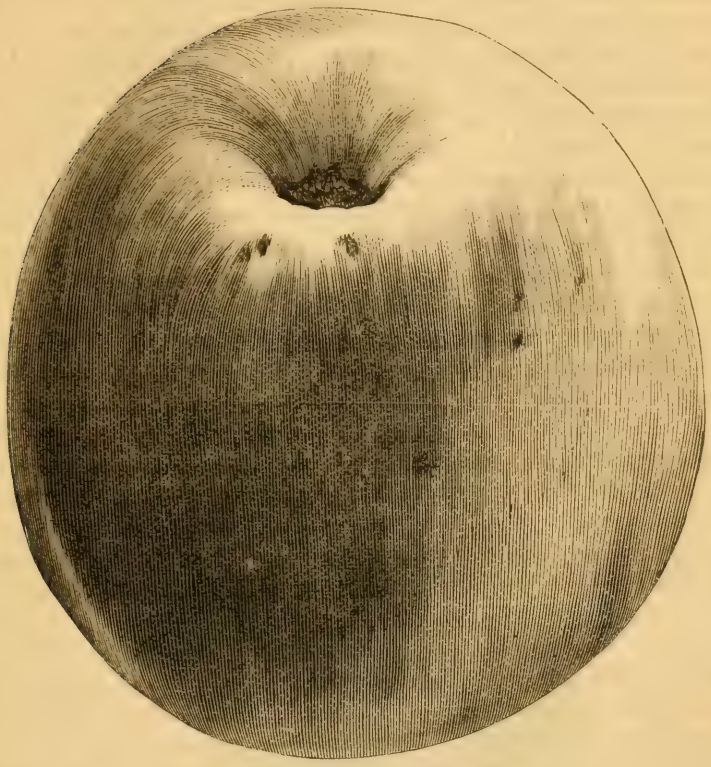
MULCHING THE PLANTS.

Mulching is the placing of mulch or litter of some kind upon the surface of the soil over the roots of plants. Its most prominent uses are the retention of moisture, the promotion of an equable temperature, and, in the case of the strawberry, the protection of the fruit from injury by the sand, which would otherwise be thrown upon it by every shower. It is a process, the importance of which, especially in our climate, can hardly be overrated. Soon after planting our strawberries we scatter some kind of mulch into the trenches, filling them nearly to a level with the general surface, but being careful not to cover up the plants. The depression in which we plant serves to prevent the mulch from being washed or blown away. Various materials may be used. Sawdust, which has lain in the heap till partially decomposed, is excellent; the short-mowings of lawn grass, half-rotted leaves, and chopped pine straw are also good. Probably rice chaff, where it can be had, would answer a good purpose, but we have no experience in its use. In Florida we used long moss, and found it admirably adapted to our purpose, though not so readily applied as the other other materials we have mentioned.

Strawberries—good, well rooted plants—well planted, according to our directions, or in any other judicious way, and well cared for, will produce a moderate, but not a full crop, the next spring.

In future articles we shall give instructions for the subsequent cultivation of the plants, and the gathering and marketing of the crop.

Moore's Extra Apple.



This beautiful fruit is much valued as well as admired in Kentucky and Ohio. The tree is a strong-grower upright, but somewhat spreading in its habit, and bears every year, but not very profusely. The fruit is from large to very large; form, roundish conical, flattened at the ends; skin, smooth and glossy; color, a clear, light-yellow, ground overspread and splashed, in the sun, with bright red, and marked with scattered, minute, raised russet dots; stem of medium length; calyx, medium, open, segments divided; basin, deep, open, with surrounding broad furrows; flesh, yellowish, crisp, tender, sub-acid, aromatic; quality, very good; core, medium; seeds, very dark; season (in Kentucky) early winter, or December and January. It would prove a late fall apple further South.

WHAT MULCH IS.—A mulch is any loose-lying substance, which, distributed over the surface of the ground, will keep that surface moist; dry leaves, chopped hay or straw, (better than long straw,) coarse manure, sawdust, tan-bark, or even coarse pebbles, will form a mulch. A mulch is never to be *dug in*, but has effect from its position upon the top of the ground.

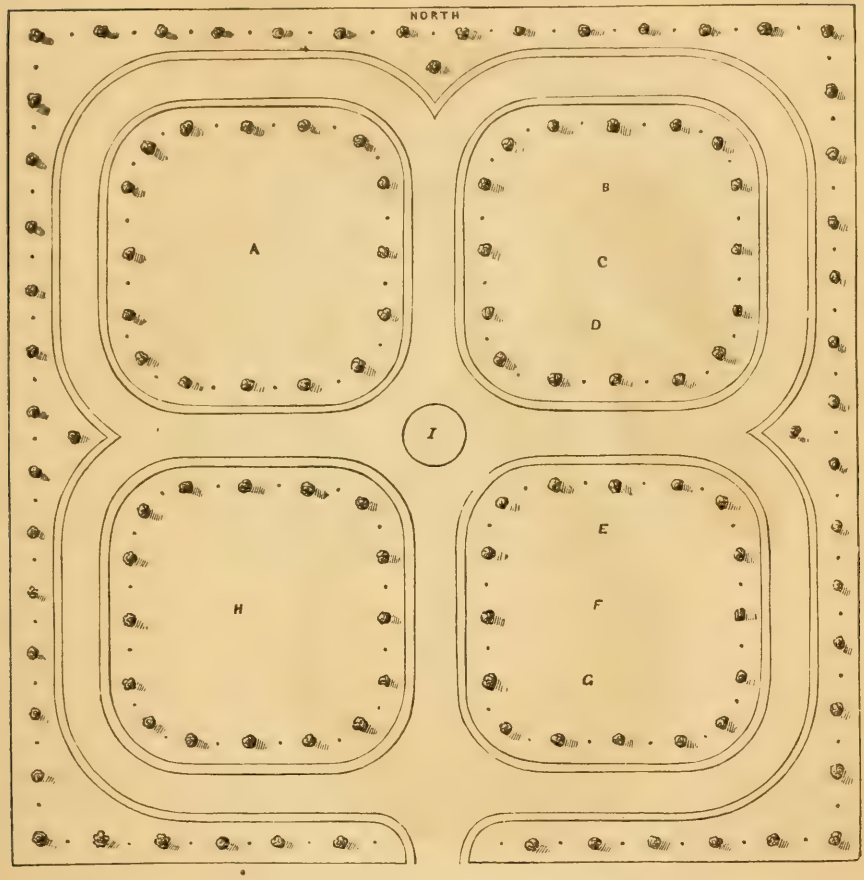
Pears for the South.

Bloodgood Pear.

Among the best pears for general cultivation in the seaboard Southern States the following seem to us to be worthy of a place in something like the order in which we here name them: Bartlett, Seckel, Doyenné d' Eté, Lawrence, Belle Lucrative, St. Michael Archangel, Duchesse d' Angoulême, Bloodgood, Columbia, Beurré Bosc, Winter Nelis, Glout Morceau and Louise Bonne de Jersey.

The Bloodgood, perhaps on account of its small size, has not been so much cultivated as it deserves to be. It is the highest flavored of all the early pears and the most desirable, we think, except, perhaps, Doyenné d' Eté, which ripens a little earlier. The fruit is often rounder than here represented, and sometimes oblate. The specimen is of medium size. It has a musky aroma; flesh buttery, melting and sweet. The fruit is best when ripened in the house.

Plan for a Fruit and Vegetable Garden.



In forming a kitchen garden the utility of straight lines is obvious, but a slight departure from these in the outlines, as in the accompanying plan, does not materially affect the principle involved. The corners are rounded off, but the rule of straight lines may be adhered to just as closely in planting the beds as if the corners were square, while the effect to the eye is much more pleasing. In softening down the corners of the beds an opportunity is also presented for breaking up the stiffness and formality of the border, which still further improves the effect of the whole. The room which this arrangement leaves in the centre affords a convenient location for an ornamental tool-house or other useful structure. The border may be planted with dwarf pears, figs, oranges and peaches, (to be kept well headed in,) with raspberries and blackberries between. The beds may be variously appropriated, to suit the wants and tastes of the proprietor, or the demands of the market.

A Hand Bouquet.

We are not prepared to lay down fully any rules for arranging flowers in a bouquet, and yet the mixing of too many colors is a rule always to be observed, as the effect is never good.

The same rules that apply to dress and work in general will thus have also reference to natural flowers and to their arrangement, while practice in this will, perhaps, more than anything, render the arranger an adept in the good disposition of shades and colors generally. The choice of flowers, although not always at control, yet if their adaptation be well understood, the effect of many a bouquet may be increased by the reservation of one single flower. For instance, fuchsias are graceful in a vase, where their natural graceful, drooping habit can be provided for; but in a hand bouquet their flowers drop so easily, and are so readily crushed, that long before the evening has passed their beauty is gone. Again, in the green for intermingling, old foilage will last much longer than that which is new or young; and again, the use of rosebuds and geraniums present a much more pleasing effect than full-blown roses and camellias, the last being only admissible when a distant view is to be had or some pattern or name arrangement created.

In the making up of bouquets, either for the hand or vase, it sometimes happens that flowers are used without stems; these are attached to small bits of wire, or tied by threads to small splints of broom corn or pasteboard strips,—the former the most readily obtainable and most in use; by this means a flower

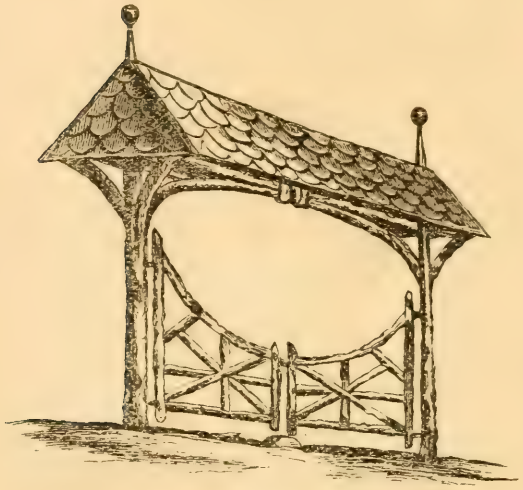
that is broken from its parent stem is used and placed in the position desired, and its base is sometimes supplied with soft cotton, or wool of a similar color, which, being wet, serves to keep the flower fresh a longer time than would otherwise be. The line-and-rule form of making the round bouquets, so much of late years in vogue, is so stiff and unnatural, so void of graceful outline, and generally so deficient in knowledge of harmony in color, that we rarely look upon one without its carrying us at once into association with the trade rather than beautiful in nature, so stiff and regular are the lines and circles drawn one around and below the other in enlarged but regular rotation. It needs but a glance at one of these machine-formed bouquets, in comparison with one like the engraving here, to satisfy any one of the fact, that in the making up of flowers to produce pleasing results, something more than mechanical knowledge is requisite.—*Horticulturist.*

Strawberries—How many Quarts per Acre?

Few persons are aware of the immense yield of the strawberry plant under high culture. We have frequent reports of crops ranging from 4,000 to 6,000 quarts per acre, and we are informed that a Mr. G. H. Baker, of Illinois, produced *253 bushels* of Wilson's Albany strawberries on one acre, giving him a clear profit of $1,509. We read also in a Northern magazine that Mr. Augustus Parker, of Grove Hill Avenue, Boston, picked 4,800 (quart) boxes of the same variety from an acre and a half of ground within ten days, and estimated that the unusual heat dried up 1,000 boxes on the vines. He sold the 4,800 boxes on his premises for thirty-five cents per quart, or $1,680 for the acre and a half of ground. We have no reason to call in question these and similar statements, but, at the same time, it should be understood that they are extreme cases, and not to be looked upon as a fair presentation of the results generally attained. We quote them to show the possibilities of strawberry culture under the most favorable conditions. We have not the slightest doubt but that 6,000 quarts per acre can be produced right here in our own neighborhood—on Charleston Neck for instance, but should consider half that quantity a very satisfactory crop, and feel sure that it can be easily attained with Wilson's Albany, and, perhaps, with other varieties.

Transferring Plants.—The editor of *The Germantown Telegraph* says: There is no mode that we ever tried so effectual in transplanting tomato, cabbage, cantaloupe, or any other tender plants from the hot-bed, or from one place to another, as to prepare a vessel filled with manure water and rich soil, about the consistency of thin mush, with which the roots of the plants should be well coated and set in a hole made with a sharp round piece of wood or dibble. After being rather firmly planted, moisten again with manure water. We have never failed in any transplanting when done in this way, and the trouble is very slight.

Another Rustic Gateway.



Our design represents a very picturesque rustic structure for a driveway. The general plan is the same as that of the one represented in our October number, but it is elaborated in details and more ornamental. The roof not only adds to its beauty, but will help to preserve the other parts by protecting them from the weather. Any rough carpenter should be able to construct it. No sawed lumber is required except for covering the roof. The posts should be prepared by charring, or by saturating with boiling tar the part to be inserted in the ground, to give them greater durability.

Lime Around Apple Trees.—We have known some farmers make it a regular practice for a succession of years to throw caustic lime around their apple trees in the spring and summer. We once noticed that a tree standing in the immediate vicinity of our dwelling had all at once put forth with renewed energy, and we were at a loss for some time to define the cause. On examination we found that a quantity of lime, which had accidentally been spilled, and rendered worthless by becoming mixed with the refuse on the stable floor, had been thrown at the foot and around the tree, and to this, as the principal cause, we immediately accredited the revivescence and renewed fructification of the tree.

Taking the hint from the incident, we purchased twelve casks of lime, and applied half a bushel to each of the trees in our orchard, and found that it produced immediate beneficial effects. Not the health of the tree only, but the quality of the fruit also was greatly improved. This application will be especially beneficial in soils where there is a redundancy of vegetable matter. We would advise our farmers to make a trial of this experiment.

[*Rural World.*

Department of Mining and the Mechanic Arts.

Nicholas W. Darrell, and the First Locomotive.

Few among the thousands who are constantly passing up and down the South Carolina Railroad are aware what an ancient institution our pet road is, and most of our readers will be somewhat astonished, we have no doubt, on being told that the gentleman whose portrait is herewith presented, ran on this road the first locomotive built in America, and that its first trip was made nearly forty years ago. What imagination could then have conceived anything like our present system of railways, covering a continent with a network of iron, and stretching out its many jointed arms from the Atlantic to the Pacific? Here, right in our midst, was the small beginning, and here is the man who helped to give the initial impulse to the wheels of progress; living among us, beloved and respected by his friends and acquaintances, but unknown to the public. He shall be no longer unknown. The following facts concerning him were kindly furnished by Mr. James M. Eason, himself an engineer, and a builder of engines, and familiar with the history of the S. C. R. R., from the beginning:

Nicholas W. Darrell, the subject of this sketch, was born on the 12th day of November, 1807. At an early age he became an apprentice to the late Thomas Dotterer, to learn the "engineer's trade."

In the year 1830, the first American locomotive arrived in Charleston, and was named the "*Best Friend.*" It was made at the West Point Foundry,

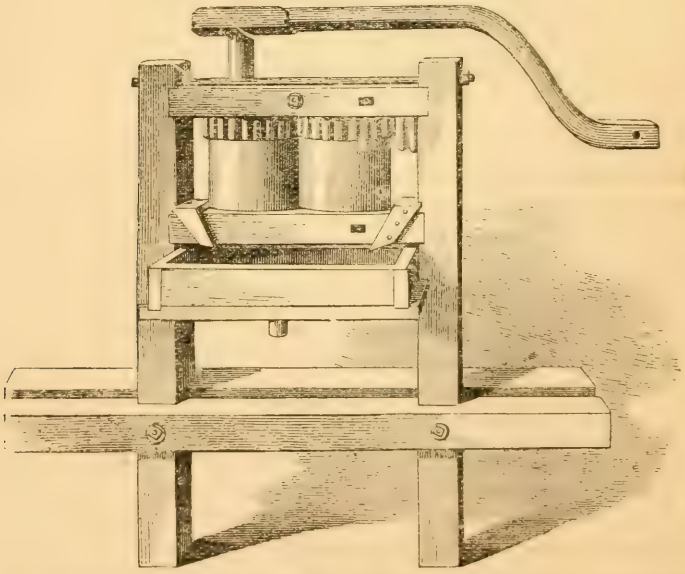
New York, under contract with Mr. E. L. Miller, for the "South Carolina Canal and Railroad Company," (now represented by the S. C. R. R. Co.)

Mr. Darrell, with others, was set to work putting the locomotive together, and he was the man who first opened the throttle valve of an American built locomotive. He was appointed to the responsible position of engineer of the "*Best Friend*," and in that position he continued until the arrival of the second locomotive, when he took charge of that.

For many years Mr. Darrell continued to run on the road; when, for his fidelity and experience, he was finally promoted to the charge of the machinery of the road as master machinist. He continued fulfilling the duties of this position until the close of the war, and still continues in the company's employ. Mr. Darrell was noted for his devotedness to the interest of the road, and no day was a holiday for him, always anxious and feeling a large responsibility for the success of the road.

As engineer of the "Best Friend," he was undoubtedly the first locomotive engineer in America, and is a noted man in connection with the introduction of the era of railroads and locomotives into the United States, upon which so much of our prosperity, as a nation, depends.

A Home-made Cane Mill.



There are numerous patent mills for grinding sugar-cane and sorghum, and some of them are excellent, but every grower of a patch of cane cannot spare the necessary cash to buy one of them. Our engraving shows a wooden mill, that any good country mechanic, or the ingenious farmer himself can build at little cost. The design needs no explanation. At a future time we shall describe and illustrate some of the improved iron cane mills.

THE RURAL CAROLINIAN.

VOL. I.] CHARLESTON, S. C., NOVEMBER, 1869. [No. II

D. H. JACQUES, EDITOR.

FUTURE OF SOUTHERN FARMING.

That the old plantation system of farming must now be generally abandoned throughout the South is too obvious to require argument. In fact it has, in the main, and as a matter of necessity, been already laid aside. Just what new methods shall take its place, it may be less easy to decide. At present we are in a state of transition. Everything is unsettled, and there is naturally no little anxiety in the public mind in regard to the future. It will require all the wisdom that can be brought to bear upon it to secure a safe and efficient reorganization of our agricultural and industrial systems; and, at the best, this reorganization must be the work of time. The radical changes required cannot be affected in a day or in a year; but a beginning must be made at once, and it is the duty of every good citizen to contribute, according to his ability, toward the promotion of the desired end, by giving the public the benefit of his observation, experience and reflection. We want the best thoughts of our deepest thinkers; the practical results of actual experiment; and accounts of the discriminating application of Northern and European methods and implements to our climate, soils and conditions.

Among the reforms which sound theory and actual experience seem to agree in clearly indicating as essential to successful farming, under the new order of things, are the following:

1.—SMALLER FARMS.

In 1860 the farms or plantations of South Carolina averaged 488 acres, those of Massachusetts 94 acres. The little farm of 94 acres was valued at $3,469; the great plantation at about $2,000.

Our great farms must be subdivided, and the smaller area cultivated made more productive and valuable by drainage, deep culture, manuring and other improvements. The surplus land should be offered at low prices to actual settlers, especially German immigrants. In many cases it will be good policy to *give* portions of this land in twenty-five or fifty acre lots to such settlers. A gentleman in Barnwell County has made a standing offer to give to any German of respectable appearance fifty acres of arable land on the condition that he will make it his home for five years. Others in different parts of the South have made similar offers.

2.—A MORE THOROUGH CULTIVATION.

Draining, hill-side ditching, sub-soiling and a deeper and more thorough tillage generally, must take the place of our surface scratching and careless, slovenly culture. The results of such improved methods have already demonstrated that our soils possess capabilities hitherto unsuspected. Discrimination must be used, however, in applying the principle of deep plowing, and we propose to discuss the subject thoroughly in these pages, so that our readers may go to work understandingly in the improvement of their lands.

3.—MANURING.

It will not pay to farm, as we must hereafter farm, without manuring our lands; and the more heavily we can manure, the better it will pay. With our inexhaustible beds of mineral phosphates, our marls, our gypsum beds, our limestone, our oyster shells, our muck, our sea-weed and the pine straw and leaves of the forest, we need not go to Peru or the Pacific Islands for guano, or to Baltimore for ground bones.

4.—STOCK GROWING.

While the farmer should draw from all the sources of fertilizing materials we have named, as well as others left unmentioned, so far as they may be within his reach, he should not rely wholly upon these. He needs, also,

the manure of horses, cattle and hogs, and this must be made on the place; so that every good farmer must be, to a certain extent, a stock-grower, and his stock must be so managed as to make the manure fully available. How this can best be accomplished, and how stock-growing can be made to pay in other ways, are questions which will be fully discussed in future numbers of our magazine.

5.—A WIDER RANGE OF CROPS.

We are not among those who believe that cotton culture will or should be abandoned in the South; but for the future we must not give ourselves so exclusively to it as in the past. We must grow the cereals; we must grow more rice and more sugar; we must grow (where favorably located) garden vegetables for the Northern markets; we must grow the castor bean, the ramie, (cautiously at first,) Sisal hemp, Esparto grass and whatever else can be made to pay, trying new things in a small way at first, and thus proceeding carefully till we can make ourselves sure of success.

These are a few of the points we deem important and worthy of universal attention at the present time, on account of their bearing upon the success of our agricultural operations and the prosperity of the country.

EMPLOYMENT WANTED.

We are calling loudly for labor—for Coolies, for German immigrants, for workers of all nations and classes. We need labor—there can be no doubt about that, but, strange and paradoxical as it may seem at the first view, there is in the midst of a people anxious to obtain laborers an earnest, a most pathetic, a wailing and an *unsatisfied* cry for something to do! There are hands willing to work, for which no work is provided. This cry for work is wrung from the bosoms of *Southern women*—widows, sisters and mothers, perhaps, of men who died in the field fighting bravely for "the lost cause." The hands that are held up empty, and in an earnest appeal for the means of earning an honest living, are willing but not strong. They cannot hold the plow or delve in the cotton field. What shall they do?

We want cotton factories and other branches of manufacturing in which these willing hands can find suitable work. We need them here in Charleston particularly. And we need schools for women in which they shall be instructed in the lighter and more delicate branches of the useful arts—in wood engraving, in type setting, in photography, in phonographic reporting, etc. Who will take hold of this matter in earnest and at once? We are doing our part in this work—employing a large number of these women in our establishment, at the office of THE RURAL CAROLINIAN. The case is an urgent one, and our appeal is but an echo of voices which should be far more potent than ours—those of *thousands of* SOUTHERN WOMEN!

THE AGRICULTURAL FAIR.

Our readers will hardly need to be reminded that the great Fair of the State Agricultural and Mechanical Society opens on the 10th of the present month, and that everybody is expected to be there. We are informed by Colonel D. Wyatt Aiken, the Secretary of the Society, that it has been determined to issue family tickets of admission to the grounds during fair week at $3 for annual and life members and $5 for other families.

All articles intended for exhibition at the approaching fair will be sent to and returned from Columbia by all the railroads in the State *free of charge*, and all visitors passed to and from Columbia for *one fare*.

Colonel Aiken says that the prospects of the approaching fair are most flattering. The old Fair Grounds have been procured, buildings are being erected and will be completed by the time of the fair, and encouraging reports come from all sections of the State, as to the interest manifested in our success, and the quantity and variety of articles to be exhibited.

A grand tournament will take place during the fair—probably on the last day.

——The estimate of the Department of Agriculture on the present cotton crop is 2,750,000 bales—too high we think.

THE IMMIGRATION SOCIETY.

We will state for the benefit of those desiring to employ German laborers that Mr. Brüggemann, the Agent of the Immigration Society, can be found during the State Agricultural Fair from eight to ten A. M., and four to six P. M., at John C. Seeger's store, Main street, Columbia, where he will be prepared to receive the last orders before going to New York.

THE MASONIC FAIR.

The Masonic Fair to be held in this city during the session of the Grand Lodge of the State promises to be one of the most complete and interesting fairs ever held in Charleston, and will no doubt draw an immense number of people to the city, especially as the railroad and steamer companies will bring here and return all visitors for one fare. We understand that the indications for a brilliant and successful exhibition are most encouraging. It will open on the 15th of the present month.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Cotton Picking will still claim the planter's attention, and the utmost care should be exercised to prevent waste and damage to the quality. As to selling, we advise "a masterly inactivity." Sell only so much as is necessary to meet present needs. By crowding your crop into market you are playing into the hands of the speculators who have caused the temporary decline in prices to promote their own ends. We are confident that it will again go up to thirty-five if not to forty cents. In fact our planters, if they act wisely, can fix their own price.

Wheat has already been sown in some parts of our widely extended parish; where it has not yet been put in, the soil should be got ready at once. The ground should be well plowed, and, unless very friable, cross-plowed and harrowed. Good commercial fertilizers, like the Wando and other Southern manures, from 200 to 400 pounds per acre, will pay well on this crop. See remarks under this head in October number.

Barley may be sown any time from October 1st to December. The soil should be made rich. Take your best available land, and if not cow-penned manure it heavily. Break it up thoroughly and deeply, sub-soiling if practicable, and sow from one and a half to two bushels per acre. See Colonel D. Wyatt Aiken's experiment with barley and clover in October number.

Rye, where not already put in, should now be sown. Poorer land will do for this crop than for barley and wheat, but good land is better than poor for almost any crop. If sown for a green crop, one and a half bushels to the acre; for a seed crop, one bushel.

Sweet Potatoes should receive the best possible care. The scarcity of grain renders this crop of more than ordinary importance. Let none be wasted. The principal points to be attended to in preserving them are dryness and a cool, equable temperature. To secure these conditions select an elevated spot for your bank; raise it a little by digging a shallow trench around it and throwing the soil upon it; cover this with a good coat of pine straw; dig your potatoes in good weather and let them dry during the day; put them in a cone-shaped heap on the prepared spot and cover them with at least eight inches of pine straw, and *let them sweat two or three days*, being careful to keep them protected, if necessary, against rain; bank them, after thus sweating, *early in the morning* before the sun has heated the heap, with at least a foot of earth. Leave no air hole, as this is not required where the sweating process has already been gone through with, and would permit changes of temperature which it is desirable to avoid.

Ditching, draining and other farm improvements are now in order; also digging muck and preparing manures.

ORCHARD AND VINEYARD.

Apples, peaches, pears and other fruits may be planted during this month if convenient, or deferred till December or January. It is well to plant early, so that the work may not interfere with the preparation for other crops. It is difficult to give lists of the best kinds for so large an extent of country and so varied a climate as is embraced in our range of circulation, but for apples, Red Astrachan, Early

Harvest, Red June, Aromatic Carolina, Sweet Bough, Julien, Disharoon, Rome Beauty, Shockley, Mangum and Comac's Sweet may be generally relied upon as excellent and productive. Of peaches the list might be made large, but the following are the most desirable for general cultivation: Amelia, Columbus June, Early Tillotson, Early York, Troth's Early Red, Crawford's Early, George the Fourth, Grosse Mignonne, Oldmixon Cling, Crawford's Late, Lemon Cling, Chinese Cling, and Baldwin's Late. Of pears we have spoken elsewhere.

Of Grapes, plant the Scuppernong and Flower's Grape by all means; Concord, Clinton, (if for wine;) Hartford, Prolific and others mentioned in our October number should also be tried. Planting may be deferred till December or January, but the ground should be thoroughly prepared in the meantime.

GARDEN WORK.

Cabbages should be hoed frequently and kept free from weeds; also turnips if sowed in drills.

Radishes, Lettuce and Spinach should be sowed from time to time for a succession, where, as in the low country of South Carolina and Georgia, the climate is sufficiently mild.

Asparagus Beds, if not already dressed, should be attended to at once. Fork them up, rake them over, and then spread evenly on the surface several inches of some fine, well rotted manure.

Onions may be planted, having the bed very rich. Just press the sets down into the earth, but do not cover them. It is well to roll the ground before planting.

Peas may be planted in the low country—some of the early dwarf sorts.

Continue to earth up *Celery* and plant out from seed-bed for a succession.

Manure should be prepared and ground dug for future operations.

Strawberries and Raspberries should be planted during this month. See directions elsewhere.

——At Columbus, Ga, they are making cotton blankets, apparently very warm and comfortable, with a good body and nap on each side, handsomely bordered in colors.

RURAL NOTES AND QUERIES.

Deep Plowing for Corn.—Mr. Fuller lately said, at the American Institue Farmer's Club, that notwithstanding the severity of the drouth in Northern New Jersey the present season, the corn upon land plowed six inches deep has not suffered, while on more shallow plowed lands it is all dried up.

The Mexican Ever-bearing Strawberry.—A correspondent wishes our opinion of this new (?) plant. We frankly confess that we know nothing about it, personally, and, therefore, have no opinion. Mr. A. S. Fuller, the well known horticultural author, and a practical fruit grower of great experience, pronounces it nothing more or less than the old Red Alpine, (*Fragaria Vesca*,) while Mr. F. R. Elliott, Secretary of the American Pomological Society, equally good authority, perhaps, expresses, in a late number of the *Rural New Yorker*, the fullest conviction that it is a new and valuable variety, (not species,) quite distinct from the old Red Alpine. Which is right? If the propagators of the plant will send us a few specimens we will cheerfully test its merits and give our opinion of its character and value.

Chip Manure.—Well rotted chip manure is very good for almost any soil and for all crops, if there are not too many wire worms in it. To kill these, compost it or mix well with lime and salt, or lime slaked with brine. We have found chip manure excellent for potatoes, both Irish and sweet, and for strawberries.

Cotton Seed Oil Cake for Cattle.—Please give the planters, through your valuable magazine, your views on cotton seed cake or meal as a food for horses, mules cattle, etc. How is it to be fed? Will it do as well as corn? Can it be fed without corn being mixed with it? Will mules and cattle eat it prepared in the same manner? These are questions asked by everybody.

Subscriber.

Knowing the composition of cotton seed, and having the testimony of both scientific men and practical farmers in its favor, we cannot doubt the great value of cotton seed cake as a food for cattle, but we have no personal experience in its use. Will some one who has such experience, reply to our correspondent through our columns?

DWARF ORANGE TREES.—Dwarf orange trees from China have reached Los Angelos, California, in good condition. "It is curious," says a writer, "to see an orange tree not over two feet high, and filled with blossoms and fruit." An acre of ground would contain over four thousand of such trees; and although each tree would produce not more than a half dozen oranges, yet the yield per acre would largely overbalance that of standard trees."

WILL STRAWBERRY CULTURE PAY?—Most certainly it will. We do not advise everybody to grow strawberries for market, for the market may be lacking or it may be small and readily overstocked; but it is profitable, in the best sense of the word, for every farmer, and every dweller in village, town or city, who has a garden, to plant a strawberry bed for the purpose of supplying his family with a delicious and wholesome fruit. Growing strawberries for market will pay well, wherever twenty-five cents per quart can be obtained for them within carrying distance. In fact, they are made to pay a large profit at a much lower figure by Northern growers.

MANURES.—1. I desire to know if compost manure, made with stone lime and salt, applied in the drill with Peruvian guano added, will be of benefit, or will not the lime in the compost manure injure the properties of the guano?

2. Does Mr. David Dickson use the same compound on corn and wheat as he does on cotton, and if so, how much to the acre?

J. G. G.

Quick lime should never be mixed with any animal manure, as it will cause the escape of the ammonia, and thus deteriorate its quality; but if you dissolve your salt and slake your lime with the brine, you will produce a new chemical combination which you may use with any manure you please, without danger. We submit your second question to Mr. Dickson himself.

CHESTER WHITE AND ESSEX HOGS.—We have received numerous inquiries in regard to these fine breeds of hogs—where they can be procured, and at what price, etc. Those who have the animals for sale should make it known through our advertising columns.

THE CASHMERE GOATS.—*Mr. Editor:* In reply to the inquiry of "J. H.," as to cashmere goats, imported by Dr. J. B. Davis, I would say that we have a small flock of them. When these goats first came to Charleston they were, for a time, at Dr. Dickson's, and I had some of them at my farm on the neck. The goats we have are from some presented to Dickson, and from some which were sent into this country from Columbia (same stock.) They are as fine as those I first had at my house. They tell me that such hair as I carried from them to New York is worth one dollar per pound for the English market. With *good fences* they are very fine stock to have. We are thinning out the woods on the mountains around us laying them down in orchard grass and clover, and think these goats will be of great service in several ways. I will bring you some of the hair.

LEWIS M. HATCH, *Asheville, N. C.*

LITERARY AND SCIENTIFIC NOTES.

——The French correspondent of the London *Lancet* sends that journal a bit of news that will be welcome to those who like to smoke, but have their misgivings, on hygienic grounds, about the safety of practice. "M. Armand," he says, "has stated to the Academy of Sciences that he has discovered a sure antidote to nicotine. The antidote is nothing less than common watercress. It destroys the poisonous effects of nicotine, and yet does not alter the aroma of tobacco." A solution of watercress may, therefore, be employed for steeping the leaves of the tobacco, and would, according to M. Armand, effectually divest them of their noxious properties; moreover, a draught of the same will act as a sure antidote to nicotine.

——A new process of bread-making has been lately patented in France, in which the grinding of the wheat has been dispensed with, and it is asserted that by this method 150 pounds of bread can be made from 100 pounds of grain, while by the old plan of using flour, only 112 pounds of bread are produced from the 100 pounds of wheat. The new kind of bread is said also to be of better quality than the old, as the gluten is not decomposed and lost by the heat of grinding.

——S. R. Wells, publisher, New York, has issued a handsome volume entitled "Wed-

lock, or the Right Relations of the Sexes," which contains many excellent hints to those who would love not only "well," but "*wisely*" also. The author takes the ground that, whereas, Love is truly blind, as he has from time immemorial been painted, Reason should always be called upon to lead him—in other words, that the *head* should guide the *heart*.

——Farmers and gardeners will find much useful information in *The Southern Farmer and Market Gardener*, an excellent compilation of agricultural and horticultural information, by Prof. Francis S. Holmes, of this city. It is published by the Holmes Book-house, Charleston, S. C.

——The October number of the *Horticulturist* is well filled and lively as usual. It has about it all the signs of a healthy and vigorous growth. Mr. Williams, its active, energetic and industrious young editor, evidently spares no labor to make it worthy of its honored name and antecedents. No magazine is more welcome on our table.

——A newly invented French sewing machine is driven by a number of springs. It is readily and quickly wound up and runs about an hour, making from 400 to 600 stitches per minute. It is a very interesting and ingenious machine, and promises to effect a great saving of labor.

——Carbolic acid is coming into very general use as a disinfectant. An ounce of the crude oil, which may be procured at any drug store, will be sufficient to keep a house pefectly disinfected for weeks. Pour half a teaspoonful or so of this upon a plate or saucer and place it in the room to be disinfected, or one in each room in the house and in each hall, renewing it as it evaporates. Its effects are immediate, and its efficacy perfect where anything can be of any service.

——Charleston has no cause to be ashamed of her daily press. The old, steady-going, staunch, high-toned, trustworthy *Courier* still (as long time ago) represents our business interests most faithfully, and is everywhere quoted as the highest authority in trade and finance. It has lately been enlarged and improved, and is as handsome as it is excellent.

——The *Daily News* has also lately shown similar indications of prosperity—a prosperity well earned and richly deserved; for it is truly a lively, wide-awake, prompt, fearless, outspoken journal, fully up to the requirements of the times in both matter and manner. A newspaper for everybody.

——*The Daily Republican* is a handsome, well-filled sheet, edited with much ability and industry, and devoted to politics, news and general information. It is an outspokon Radical in politics.

SPIRIT OF THE RURAL PRESS.

——Our thanks are due to the press throughout the country—North as well as South—for the cordial welcome universally extended to THE RURAL CAROLINIAN, and we assure our editorial brethren that we fully appreciate their kind and handsome expressions of approval and are duly grateful for the powerful influence which they are so generously exerting in our behalf.

——Southern wheat has been specially noted this season for its excellence, and we observe that Northern farmers are sending South for seed wheat. A correspondent of the *Country Gentleman* speaks in the highest terms of a variety which he calls Early Georgia White. He says: "It is a bald wheat, short straw, and yields well. I got twenty-two baskets from the machine, which I think will make full twenty-two bushels. I shall give it another trial, and if it does as well another year, shall expect it will be the wheat for us, for we have long sought for a first-class white wheat that would ripen early."

——The *North British Agriculturist* describes a plow made on a new plan and called after its inventor, Lord Tweeddale, the Tweeddale plow. It has a mouldboard formed on a new system of lines, and of dimensions that render the plow capable of taking a furrow slice twelve inches wide and thirteen inches deep in the most effective manner. It leaves a clean, flat furrow, but the furrow slice taken by it, instead of being turned over in an entire form, in the manner effected by the *fine*-working plows, is only so far turned, and at the same time broken up, as serves to present the soil in the best possible state to

the ameliorating effects of the atmospheric influences.

——The *Gardener's Monthly* announces a new and wonderful strawberry plant "with fruit stems as thick as a man's finger, two feet high, blooming like an immense hyacinth, each blossom giving three berries, and the berries as large as hen's eggs, firm, bearing carriage as well as potatoes—the plant ever-bearing." Wonder if anybody is hit?

——The editor of the *Horticulturist* pronounces the Napoleon III strawberry "superb," and expresses intense admiration for it. "There is not a berry grown," he says, "save the Lenning's White, that can equal its beautiful aromatic flavor, and its vigor and productiveness exceed anything we have yet seen." It has proved a failure here in the South in all cases that have come under our observation, but it may succeed in some localities.

——The *Revue Harticole* describes a new dwarf peach called Luizet Dwarf, raised from the seed of the Grosse Mignonne. It is described as productive and very beautiful, with a better fruit than any other dwarf peach.

——The *Charleston News* has the somewhat sensational report of a contemplated "Revolution on the Sea Islands," which revolution is to expel the long staple or Sea Island cotton and substitute the finer varieties of the upland cotton. As this matures more rapidly than the Sea Island cotton it is hoped that it will in a great measure escape the ravages of the caterpillar, and on the rich lands of the islands make a richly remunerative crop, which the long staple has of late failed to do.

——The *Reconstructed Farmer* has the following advice to cotton growers: "Price your own cotton, and keep it [if you can.] There is nothing to hinder you from getting your price, as they are compelled to have it. Take their gold and invest it in improving your farms and manufactories, as you formerly did in negroes, and in a few years you will be surprised at your wealth and power."

——The *Maryland Farmer* reports that Mr. Meem made on his Mount Airy estate, in Shenandoah County, Va., from 10,000 to 12,000 bushels of wheat. During harvest he had five reapers going, followed by fifty hands.

——A correspondent of the *Charleston Daily News*, writing from Greenville, pronounces the making of sugar from the sorghum molasses a complete and valuable success, and adds: "To know that this common and necessary household article can be manufactured cheaply here in Greenville—of material raised on our own soil, by our own farmers—is a source of very great satisfaction. The result will be a revolution in our crops, as this will pay as well, if not better, than cotton or anything else."

——One Farmer Fogy, in the October number of the *Rural Southerner*, don't agree with Mr. Dickson on the subject of immigration: "Mr. Dickson," Farmer Fogy writes, "sez we don't want any more laborers in Georgia, and Mr. Dickson is rite, only he ought to have sed: *Mr. Dickson don't want any more laborers on his plantashun*, instead of *Georgia don't need them*, fur Georgia is a rite big place, Mr. Editor, and a man in Hancock County, and on a plantashun so big that he kan't hardly walk out uv it in a day kan't see all over Georgia, and know and rite wisely what Georgia wants."

——According to the *Natchez Democrat*, the new cotton mill at Stonewall, Miss., is proving a complete success. It says: "It runs two thousand spindles, fifty-two looms, employs seventy-five hands, and consumes about nine hundred bales of cotton per annum. The employees are principally widows and daughters of families impoverished during the war. The company proposes doubling their machinery the coming season."

——The *Chester Reporter*, in view of the great danger of suffering for the want of breadstuffs the coming year suspects that the prudent planter will sow largely of wheat, rye and oats, and economize as much as possible with his corn, and we fully endorse the advice, as will be seen elsewhere in our columns.

——Fruits, as a rule, have yielded abundantly, but apples less so than the other species.

MERE MENTION.

——A Tennessee apple tree has yielded this year ninety bushels of fruit of excellent quality.

——It is estimated that the rainfall in the Northern States is forty inches; the Southern States fifty.

——The wheat crop of this year is large. The quality of that grown at the South is decidedly superior.

——The Royal Horticultural Society of London has over 130 varieties of figs, all grown under pot-culture.

——In one day last summer there were received in New York 400,000 quarts of strawberries.

——The Fair of the State Agricultural and Mechanical Society opens at Columbia on the 10th of November. Everybody who can should attend.

——According to the Report of the Department of Agriculture for September, there is a decrease in the production of hogs as compared with last year.

——Slips, cuttings and grafts may be safely sent thousands of miles by mail if wrapped in oiled silk. The contents must be plainly marked on the envelope.

——We are glad to learn that our old friend Andrew S. Fuller has become horticultural editor of *Hearth and Home*—"the right man in the right place."

——A date tree, near the middle of the square bounded by Julia, St. Charles, Girod and Carondelet streets, New Orleans, is now loaded with bushels upon bushels of its rapidly ripening fruits.

——Fresh grapes from California were received in Boston this season in excellent condition, and sold for thirty-two cents per pound. They were of the variety known as Mission Grapes.

——One railway brought into New York 110 cars of peaches one morning—each car bringing 500 baskets. Some of the Delaware growers have their own steamboats for conveying them.

——Mr. Charles Lanman is writing for *Appletons' Journal* a series of illustrated articles on the "Novelties of Southern Scenery." In the number for October 23d, Tallulah Falls are described and pictured.

——The orange groves of St. John's River, Florida, are said to be more fruitful than for ten years previous.

——There will be a grand Masonic Fair in this city commencing on the fifteenth of the present month. It will, we are sure, be a success.

——We lately saw plants (we might say trees) of the Camellia Japonica growing in the open air on the Middleton estate, Ashley River, more than fifteen feet in height and full of blossom buds.

——The Souvenir du Congress Pear, a seedling of the Bartlett, is highly spoken of by the *Revue Horticole* and other foreign journals. The *Horticulturist* has a full page representation of it.

——A correspondent in Washington County, Ala., sends the *Country Gentleman* a sample of paper made from the okra fibre, stalk, root and pod, by the Chickasabogue Manufacturing Company, near Mobile.

——A machine has been invented and put in operation in California which, it is said, has cut, threshed, cleaned and sacked the wheat from twenty acres in ten hours, with only three men to work the machine.

——The London *Gardener's Chronicle* says that the two-furrow plow of Mr. Fowler, (represented in our October number,) "does some of the best work we [the editor] ever saw," and "is growing rapidly into public favor for preparing land for sowing with grain."

——Messrs. Willis and Chisolm, of this city, in estimating the present season's cotton crop at 2,500,000 bales, say: "We are influenced by the belief that the labor of the country is annually declining in efficiency, and that it is *now*, and will continue to be, entirely incapable of increasing the production."

——It is proposed to cut a canal from the five lakes forming the head waters of the Ashley River to the navigable portion of the river, in order to render transportation easy for the phosphates recently discovered there. The cost is estimated at about $3,500, and it is said over $6,000,000 worth of the deposits can by its means be transported cheaply to Charleston.

Correspondence.

STATE AGRICULTURAL SOCIETY.

Editor Rural Carolinian: I have received your October number and am much pleased with your first effort. Some say, of course, it is the best. As an old editor and publisher, I take the different position that your future numbers will sustain it.

With these few prefatory remarks, I desire, with your consent, to say a few words on the action of the recently constituted "South Carolina State Agricultural and Mechanical Society," which, it is said, is not a new society, but only a revival of the old South Carolina Agricultural Society, and you seemed to so understand it, as you termed the next November meeting the "Sixth Annual Fair," etc.

You say "Every man who has the interest of the State at heart should become a member of the South Carolina State Agricultural and Mechanical Society," etc. In this I fully agree with you, sir, *if he is not already a member.* But are you not aware that a large number of the old *life members* have, by the action of the new or "revived" society, been expelled or repudiated? It is not contended that a new society has at the late organization been formed, but is only a revival or resuscitation of the old society, which was *not* dead but only scotched. If so, then why exclude the old life members, unless they again come in and pay their twenty-five dollars more for another life membership? I doubt whether many of the present survivors will again, on these terms, become members. Such as I have conversed with on the subject will not.

Who, Mr. Editor, got up the old society, became life members, and sustained it, until that fiend of hell, Sherman, destroyed our beautiful premises? But by doing so did he abolish the society? If so, then the old life members are no longer members, and we have a new society instead of a revival of the old. Many of the old life members are still alive and would, no doubt, be pleased to be recognized as members of the revived society to assist in its transactions, but not *all* on the terms proposed.

If the society keeps itself circumscribed within the bounds of *agricultural* and *mechanical* interests, we desire and wish it most cordially every success, but cannot personally sustain it by again becoming a life member. Many of our ex-life members, who did as much in getting up and sustaining our old society, perhaps more than any now living, have passed off the stage; prominent amongst them was our lamented President Calhoun; but many survive and consider their expulsion from the society, to say the least of it, ungrateful.

You say, Mr. Editor, "We shall expect every subscriber to THE RURAL CAROLINIAN residing in this State to become a member of the State Agricultural and Mechanical Society." In answer, I shall, as you are already aware, patronize your magazine, *but not personally the society.* S.

Pendleton, S. C.

THE COTTON PRESS.

Mr. EDITOR: Much ingenuity is just now being expended by inventors upon the cotton press; their attention being chiefly directed to producing something that may be worked by hand power.

Cotton ginning and packing approximate too closely to the character of a manufacture to be profitable, conducted in a small way, and hand power is the least reliable and the most difficult to obtain in the cotton country, of any power that can be suggested.

What we want is that the lint room of the gin house, and the box of the cotton press, shall be one and the same thing. In other words, that the lint cotton shall be thrown direct from the gin into a room sufficiently large to contain 500 pounds of it, and then the sides of this room to be compressed by horse, water or steam power, until the cotton is brought into the dimensions of a commercial bale, leaving nothing for hand labor but to put on the ties.

In an ordinary press it takes near an hour for two stalwart hands, by laborious tramping, to get 500 pounds of lint in the box, and then not more than fifteen minutes to run down the screw, put on the ties and roll out

the bale. The desideratum is to save this hour of human labor.

Can none of our ingenious mechanics accomplish it? LOW MIDDLING.

PENDLETON FARMERS' SOCIETY.

At the anniversary meeting of the Pendleton Farmers' Society, lately held, the following officers were elected for the ensuing year:

J. W. Crawford, President.
Major R. F. Simpson, Vice-President.
B. Frank Sloan, Secretary and Treasurer.
Major Geo. Seaborn, Corresponding Secretary and Librarian.

This is the oldest society in the State, having been established in 1815. Upon its list of members are such names as General Thomas Pinckney, Hon. Wm. Lowndes, Hon. John C. Calhoun, General D. E. Huger, North, Pickens, Lewis, Earle, Taylor, Cherry, Maxwell, W. R. Davis, Gaillard, Whitner, Symmes, etc. We are glad to find it still in operation. Such societies are needed in every county—organizations full of vitality, active and up to the requirements of the times.

Department of Literary Miscellany.

HIDDEN.

O blushes, rise not to my cheek;
  O tell-tale eyes, be clear and gay;
O lips, no warmer language speak
  To him than simple yea and nay;
O heart! in thy most deep recess,
  Be safely, surely hid away
This secret, that he may not guess.

They call me beautiful; alas!
  By him uncared for, what care I?
Once I knelt down and kissed the grass
  His foot had pressed in passing by;
A little common buttercup
  That he had crushed and left to die,
Still for his sake I treasure up.

O tender Father! is it sin
  To love thy noblest creatures thus,
Although no answering love we win?
  Art Thou not ever leading us?
And hast Thou sent this love to me,
  To calm my heart tumultous,
And guide me, through my grief, to Thee?
O let me love him to the end
  Most purely; and perchance some day
He'll take my hand and call me friend,
  When time for love is passed away;
When eyes that shine when he is near
  Are dim; when golden locks are grey;
And Death, the angel, draweth near.

[*Chambers' Journal.*

WOMEN'S NAMES.

"The names of women should be agreeable, soft, clear, captivating the fancy, ending in long vowels resembling words of benediction."—*Laws of Menu.*

On a certain occasion, two French ambassadors were sent to the Spanish Court to negotiate a marriage between one of the Castilian princesses and Louis VIII. The names of the royal females were Urraca and Blanche, the first of whom was the elder and the more beautiful, and was intended by the court for the French king, but the ambassadors resolutely persisted in their preference for Blanche, on account of her name, saying that Urraca would never do. They were sensible men. So Blanche was made queen because she had a fair name, and Blanche is always *fair*, if not beautiful. Is there not something in a name?

I bespeak the thanks of the yet unnamed generations, on whom I hope to confer great and lasting benefits by calling attention to our personal nomenclature.

There are nearly two hundred feminine Christian names which may be considered as either native or naturalized among us, but scarcely fifty of these are in anything like general use. Anna, Alice, Caroline, Catherine, Elizabeth, Eliza, Ellen, Emma, Fanny, Harriet, Jane, Julia, Lucy, Louisa, Mary, Martha, Margaret, Sophia and Susan, with perhaps a few others, are universal. They are all good names when understandingly applied, and I would not discourage the use of one of them, but there are a hundred others, equally good, which are seldom or never used. Our poverty in the matter of personal appellations is truly distressing, as illustrated in the fact that in almost every neighborhood one may find two or three Marys and as many Fannys, Ellens and Lizzies, creating great confusion unless we make use of the surname also in speaking of each individual Mary, Ellen, or Fanny. To avoid this continual repetition, we should bring into use a greater variety of pretty names.

Mary, albeit some etymologists translate it *marah*, (*bitter*,) is one of the sweetest as well as the commonest ever given to woman. I prefer to consider it as signifying *exalted*, or, as another authority has it, *star of the sea*. Maria and *Marie* (the latter being French) are merely other forms of the same name, and, of course, have the same meaning.

Martha means *bitterness*, which, alas! is too often significant of the lot of woman; but our Marthas may be very sweet girls in spite of the etymologists.

Anna, Anne, Hannah, and probably Nina and Nancy, are all from the same root, and signify *gracious* or *kind*, of which fact the fair owners of these prenomens will please to take notice, and govern themselves accordingly. Jane, now generally familiarized into Jenny, (please don't write it *Jennie!*) though differently derived, has the same meaning as the foregoing.

Ellen was originally Helen, (Latin, *Helena;* French, *Helene.*) According to some etymologists, it has the meaning of *alluring*, while others define it as *one who pities*. Many a Helen, since she of Troy, has proved alluring, and some have shown that pity which is akin to love. Ella is only a variation of Ellen.

For Sarah (Hebrew, *Sara* or *Saria;* and Arabic, *Zara*) we find two definitions—*a princess* and the *morning star*.

Lucy signifies *like light*, and the name was anciently given to girls born at daybreak. Aurora, Aureola and Aurore, (*golden, the dawn* or *morning redness;*) Bertha (*bright*) and Clara (*clear*) may be grouped with it.

Louisa (French, *Louise*) is the feminine of Louis, and has the meaning of *protector*, or *one who furnishes a place of refuge or of rest.* It is sweetest in its familiarized or pet form of Lou.

Fanny, or, more formally, Frances is *frank* or *free;* Elizabeth, (better as Lizzy,) Isabel, and Eliza, *true;* and Sophia, *wisdom*.

Catherine, or Katharine, derived from the Greek, *Kathare*, (*pure* or *chaste,*) is one of the best of all our female names. It is pretty in its Irish modification, *Kathleen*, and most attractive as Kate.

Caroline, Charlotte and Carlotta, with their diminutives, Lotia, Lotty, Carry, Lina and Cally, are all feminine forms of Charles, (Spanish, *Carlos;* German, *Karl,*) which comes from the Sclavonic *Krol*, a king, and the fair owners of these fine names should, therefore be *queens*—queens of *hearts*.

Julia, of which Julietta and Juliet are simply diminutives, signifies *soft-haired;* Harriet, *mistress of the house;* and Alice, a *princess*.

Emma should be *tender, affectionate, motherly.* The name is said to signify, literally, *one who nurses, cares for, or watches over another;* but another authority translates it *industrious*.

Susan signifies *a lily*, and is a fitting name for a tall, slender, flower-like girl, of fair complexion and native grace. As companions for this, Lilian, *lily like*, and Istalina, *white lily bud*, may be mentioned. The last is of Indian derivation, but might appropriately grace the fairest of Anglo-Saxon maidens.

Margaret comes to us from the Latin *margarita, a pearl.* But another and if possible a still more beautiful signification has, curiously enough, attached itself to the name. The German word *magd*, a maid, was anciently written *magete* and *maghet*, which words were easily confused with Madge, and thus with Margaret. Daisies were also called *maghets*, maids or margarets, whence we have the French, *marguerites*, daisies.

Among the beautiful names less frequently met with are: Agnes, *chaste;* Agatha, *kind;* Amelia and Amy, (from the French verb *aimer*, to love,) *beloved;* Adaline, *of noble birth;* Eleanor, *all-fruitful;* Gertrude, *all truth;* Grace, *favor;* Matilda, *a brave maid;* Laura, *a laurel;* Phebe, *radiant* or *light of life;* and Edith, *rich*.

Now why not add indefinitely to this list by introducing beautiful names formerly in use, but now nearly obsolete, and by the adoption of such foreign and classic ones as are adapted to the genius of our language? I will suggest a few which seem to conform to these conditions, and to be in every way worthy of the yet-to-be-christened daughters of America.

Beatrice, *one who blesses*, is a sweetly significant name. It is a favorite one in Italy, and is not entirely unknown here. It should be more common; and the same may be said of Letitia, *joy;* Irene, *peace;* Lois, *good;* Blanche, *fair;* Miranda, *admirable*, (see Shakespeare, in "The Tempest;") Eve and Eva, *life-giving* or *fruitful;* Ruth, *satisfied;* and Salome, *peaceful*.

Almah is of oriental origin, and signifies *a virgin*. Alma, without the *h*, is Latin, and means *benign, genial*, or *one who nurtures* or *cherishes*. Cora is a *maiden;* Junia, *youthful*, (ever young she should be;) and Barbara, *strange* or *foreign*.

The promise of great beauty may be acknowledged by such a name as Mabel, *ma belle, my fair one;* Amanda, *lovely;* Rebecca, *of enchanting beauty;* or, best of all, Calista, *most beautiful*. Anabel (from *annah*, or Hannah, and *bella*) signifies *kind and beautiful;* and Claribel, *bright and beautiful*.

I have mentioned several floral names. There are others which one might wear as she would a crown of fragrant blossoms. For instance, Rose and Rhoda, *a rose;* Viola, *a violet;* Florence, *blooming;* Flora, *the goddess of flowers;* Olive, *the olive tree*, or symbolically, *peace;* Althea, *marsh mallow*, (Greek, *althaia*, from *althaino*, I heal; hence, also, very beautifully, as well as appropriately, *the healer;*) and Thalia, *flowery joy*.

I have room for only a few more out of the many that might be offered, but must mention Mina, *love;* Stella and Estelle, *a star;* Nora, Honora, *honor;* Evadne, *well pleasing;* Millicent, prettier as Milly, *honey like;* Madeline, *magnificent;* Theodora, *gift of God;* Pauline, *little one;* Amoret, *little love;* Winnifred, Winny, *winning peace;* Esther, *secret;* Silvia, *born in the woods;* and Una, *only one*.

[*Hearth and Home.*

TO A LITTLE HOUSEWIFE.

O little housewife, clean and spruce,
Thy use one heart divines:
A rosy apple full of juice,
And polished—till it shines!
A tidy, tripping, tender thing,
A foe to lazy litters;
A household angel, tidying
Till all around thee glitters!

To see thee in thy loveliness,
So prudish and so chaste,
No speck upon the cotton dress
Girdling around thy waist;
Thy ankle peeping white as snow,
Thy tuck'd up kirtle under;
What shining dishes, row on row,
Behind thee, stare and wonder.

While round thy door the millions call,
While the great markets fill,
Though public sorrow strike us all,
Singing, thou workest still;
Yea, all thy care and all thy lot
Is ever sweet and willing
To keep one little household spot
As clean as a new shilling.

The crimson kitchen firelight dips
Thy cheeks until they glow,
The white flour makes the finger-tips
Like rosebuds dropt in snow;
When all thy little gentle heart
Flutters in exultation
To compass, in an apple tart,
Thy noblest aspiration!

O housewife, may thy modest worth
Keep ever fresh from wrong;
Blest be the house and bright the hearth
Thou blessest all day long!
And nightly may thy sleep be sound
While o'er thee, softly, stilly,
The curtains close like leaves around
The hushed heart of the lily!

[*All the Year Round.*

ON STRAWBERRIES.

The strawberry is one uv nature's sweet pets. She makes them worth fifty cents, the furst she makes, and never allows them tew be sold at a mean price.

The culler uv the strawberry iz like the sitting sun under a thin cloud, with a delicate dash up the rainbo in it; its fragrance iz like the breath uv a baby when it furst begins to eat wintergreen lozzingers; its flavor is like the negtar which an old-fashioned goddess used to have in the bottom uv the tumbler when Jupiter stood treat on Mount Ida.

There is many breeds of this deliteful vegetable, but not a mean one in the hul lot.

I think I heve stole them, lying around loos, without any pedigree, in somebody's tall grass when I wuz a lazy schoolboy, that eat dreadful easy, without any white sugar on them, and even a bug occasionally mixed with 'em in the hurry ov the moment. Cherrys is good, but they are too much life suckin' a marble with a handle tew it. Peaches is good, if you don't git enny ov the pin feathers intew your lips. Watermillons will sute ennybody that iz satisfied with half sweetened drink; but the man who ken eat strawberrys, besprinkled with crushed sugar and bespattered with kream, (at somebody else's expense,) and not lay hiz hands on hiz stummuck, and thank the author ov strawberrys and stummucks, and the phellow who pays fur the strawberrys, iz a man with a wornout conscience—a man whose mouth tastes like a hole in the ground, and don't care what goes down it.—*Josh Billings.*

HOME.

Forest-girdled, cedar-scented,
Veiled like Vesper, sweet and dim;
Pure as burned the Temple's glory
Shadowed by the Seraphim;
Islet, from contending Oceans,
Coral-cinctured, crowned with palm,
Where the wrestling world's commotions
Melt through music, into calm;
Throats that sing and wings that flutter
Softly mid the balm and bloom—
Sweeter sounds than lip can utter
Hath my heart for thee,
My Home.

Bless that dear old Angel-Saxon*
For the sounds he formed so well,
Little words the nectar-waxen,
Harvest of a honey cell
Sealing all a Summer's sweetness
In a single syllable!
For, of all his quaint word-building,
The queen-cell of all the comb,
Is that grand old Saxon mouthful,
Dear old Saxon *heartful*,
Home.

[*F. O. Ticknor, in New Eclectic.*

* I desire that your Devil shall not fall out with my "Angel." I *meant* to write *Angel*-Saxon, having Pontifical authority for the pun.—*Author's Letter.*

Etiquette for Children.—Always say Yes, sir. No, sir. Yes, papa. No, papa. Thank you. No, thank you. Good-night. Good-morning. Use no slang terms.

Clean faces, clean clothes, clean shoes and clean finger-nails indicate good breeding. Never leave your clothes about the room. Have a place for everything and everything in its place.

Rap before entering a room, and never leave with your back to the company.

Always offer your seat to a lady or old gentleman.

Never put your feet on cushions, chairs or tables.

Never overlook any one when reading or writing, nor talk or read aloud while others are reading.

Never talk or whisper at meeting or public places, and especially in a private room, where any one is singing or playing a piano.

Be careful to injure no one's feelings by unkind remarks. Never tell tales, make faces, call names, ridicule the lame, mimic the unfortunate, nor be cruel to insects, birds or animals.

PITHY BREVITIES.

—— A dull tool wastes time and is never used but by a dull fellow.

—— One of the most important rules of the science of manners is an almost absolute silence in regard to yourself.

—— While a mother was brooding over her poverty, her little son said: "Mamma, I think God hears when we scrape the bottom of the barrel!"

—— Every young couple who desires to make a good start in life must keep two bears in the house and feed them well—bear and forbear.

—— Josh Billings says: "I am violently opposed tew ardent speerits as a bevridge, but for manufacturing purposes, I think a little of it tastes good."

—— Lavater says: "He who sedulously attends, pointedly asks, calmly speaks, coolly answers and ceases when he has no more to say, is in possession of some of the best requisites of man."

—— Travellers in the Orient secrete gems in their flesh against the time of need. So do we enshrine precious memories in our hearts, to brighten life when darkened by calamity or desolated by sorrow.

—— Passionless men doubtless usually take more credit to themselves for goodness than they deserve, while fiery men are sometimes judged over-harshly. An old divine says the graces which would have converted John would hardly have kept Peter from knocking a man down.

—— A girl, keeper of a toll-gate in England, was asked by a swell velocipedist how much he had to pay. "That, sir," replied she, "depends upon whether you ride through the gate, or whether you get off your dandy-horse and drag it through; because in that case every two-wheeled vehicle, drawn by a horse or an ass, pays three pence."

Hygiene and Household Economy.

TO PREVENT FEVER AND AGUE.

"An Eminent Physician," in an interesting paper published in *Hearth and Home*, says:

It is a matter of much importance to those compelled to live in districts where the causes of malarial fevers exist to use preventive measures. It has long been a question in the medical profession whether the same remedies which break up the fever and act as anti-periodics would not, judiciously administered, also prevent the fever. It is now satisfactorily proved that these agents do act as preventives as well as curatives.

In the Southern States the value of preventive measures in malarial regions is well understood. A physician in that section, in an article on this subject, relates the following illustrative case: "An overseer agreed to take charge of several rice plantations in one of the sickliest regions of rice culture, undertaking to spend the summer months on one of the plantations. He made no inquiry as to the health of the one chosen as his residence; it was selected from its convenient locality. When warned of the danger of his residing there in summer, he said he would never have the fever; his confidence in his capacity to resist malarious disease seemed unlimited. The result fully justified this confidence. He lived ten years or more in that neighborhood, spending every summer on the plantation. He visited his rice-fields without hesitation, at any hour, day or night. He never had an attack of fever during that time. I saw him after he had been there several years, and a finer specimen of robust health it would have been difficult to find. It was ascertained, on inquiry, that it was his habit to take quinine daily, during the summer, before leaving his house."

Many other examples might be quoted illustrating the same fact, but my own experience is most conclusive. I have for many years been accustomed to prescribe a bitter wine for families living in malarious localities, to be taken occasionally during the summer and fall months, and with great benefit. Though it does not prevent all attacks of fever, it very largely diminishes the number, and renders the fever very mild in those attacked. The real benefit from these agents lies in their power to tone up the system, enrich the blood, strengthen the nerves, and stimulate the digestion. They thus antagonize the malarial poison which weakens the system by impoverishing the blood, enfeebling the nerves, and destroying the appetite and digestion.

A great variety of bitter infusions and tinctures may be used for this purpose, but

the best is, undoubtedly, Peruvian bark, or its active principle, quinine. The bark of the dogwood, *Cornus Florida*, or of the wild cherry, or of the willow, made into a tea, or put in wine or brandy, answers the same purpose, though it is not as reliable. A tea made of boneset, *Eupatorium*, is also very useful when taken in small quantities daily. Many other common bitter vegetables have the same tonic effect.

ADVICE FOR GIRLS.

Mrs. R. B. Gleason in the *Herald of Health* has the following sensible words addressed to girls who have grown delicate and dyspeptic by reason of too much school and too little general exercise:

"Have you cold feet, pressure of blood to the head, loss of appetite, constipation? Domestic work, cheerfully done, is an excellent remedy for all these. Remember, cheerfully done. A bad spirit spoils any remedial means. You don't like it. Very probably, but you can come to like it. To find the crown that lies beneath every cross, it must be shouldered and carried cheerfully, not shirked half of the time, dragged the other half.

"Return to the mother who has been so tenderly longing for you, not to be a pretty parlor ornament merely, or worse, a genteel invalid, but to share the duties which often rest too heavily on the maternal head of the household. Yes, not only share them, but soon be able to shoulder them all, and thus add length and strength to the days of one who has done so much for you. Grown-up daughters come on just when the mother most needs help. As she nears her first half century she should have a season of leisure for rest and retrospect, and then she will recuperate and be ready for active service for years to come, with less of beauty and more of wisdom than characterized her earlier days. Every farmer recognizes this principle in reference to his favorite family horse, and so turns out the noble animal into a good pasture for a whole summer, saying, 'It will pay in the end.'

"Human nature and horse nature are not unlike in this, and many do not live out half their days for want of this year of jubilee, like that appointed for the Jews.

"Gentle, patient, devoted women for lack of this release go beyond the rallying point, and so die early or live in invalidism. Mothers are over-indulgent, and daughters are more thoughtless than heartless, and both are debilitated—one by over-work, and the other for lack of it. As to home duties, let every young lady honor the estate in which God has placed her. Jesus went from the temple at Jerusalem to Nazereth, and was subject to his parents, or, as we suppose, helped Joseph, he being a carpenter. So when you leave your temple of knowledge and go to your home be subject to your mother, and ready to help her, and as soon as possible give her rest from her labors for a time. If she keeps house and does her own work, you should soon be able to assume all her duties. If she has a great house, many servants, and a large social circle, then her position is still more trying, and she is in greater need of release. Perhaps there is an invalid in the family, or wild girls, or wayward boys, or a backward scholar who needs bringing up for day and Sunday school, who tax your tried mother. If so, assume one after another of these responsibilities as fast as you are able, and she will breathe easier and sleep sounder."

CARBOLIC ACID COMPOUNDS.

Carbolic acid and its compounds seem destined to play an important part in medicine, domestic economy and the arts. The coarser carbolic preparations — soaps, etc. — have proved wonderfully efficacious in curing some of the most dangerous diseases of cattle and sheep as well as in the destruction of parasites and troublesome insects generally.

F. O. Ticknor, M. D., ("Torch Hill,") thus speaks of their applications to human disease, in the Columbus (Ga.) *Sun and Times*:

"I have tested these remedies in a host of disorders, from simple *sun-burn* to that horrible condition in which corruption and the worm have anticipated final dissolution, and where relief to the patient seemed as little likely as the resurrection of Lazarus!

"In many of these, and especially the last, the effects have touched upon the miraculous! In the majority, they have surpassed expectation; and in none, except perhaps *scrofula*, such as is rapidly destroying the negro race, have they appeared detrimental.

"Most remarkably, they have *never* failed to improve the personal appearance of the patient, removing everything noisome or noxious from the skin, and imparting a softness and glow resembling the beauty of childhood. And even more remarkable still, the same effect has followed their application *after death*, where these agents have been used in embalming.

"As deodorizers and disinfectants, their effect is instantaneous and permanent. As *preventives* of malarious, contagious and infectious diseases, they are already far beyond rivalry.

"For the instant and utter destruction of parasites and all their evil consequences, they are as *lightning*."

Our own observation and experience enables us to endorse most of the foregoing statements, wonderful as they may seem.

RECIPES.

Cure of Croup.—A German doctor states that the croup is always curable by a very simple remedy. This consists, first, in applying water to the throat by means of a sponge or soft cloth, so hot as to be very painful to the hand of the operator, instant relief being usually afforded. After this has been continued for fifteen or twenty minutes, a poultice of linseed meal, rolled up in cloth, is to be applied while very hot, and left on for some time. The remedies are to be repeated should the attack return; but the writer states that after a long experience he has never known them to fail.

A Remedy for Roaches.—A correspondent says: "Take powdered borax, scatter it in your kitchen along the wash-board, and pour it into the cracks. If they frequent your parlors or bed-rooms, scatter it along the wash-board into the cracks. Do this three or four times and you will drive them out of your house."

Stewed Tomatoes.—To a dozen large tomatoes, scalded and the skins removed, add a tablespoonful of good brown sugar, salt to taste, a teacup of bread crumbs, a large heaped tablespoonful of good butter. Put in a covered stew pan, and cook an hour; shake the pan well and frequently. Beat up the yolks of two or three eggs, and just before serving, stir them rapidly to the tomatoes; let them remain a minute, and serve in a small tureen or covered dish.

How to Tell Wholesome Meat.—1. It is neither of a pale pink nor of a deep purple tint, for the former is a sign of disease, and the latter indicates that the animal has not been slaughtered, but has died with the blood in it, or has suffered from acute fever. 2. It has a marbled appearance from the ramifications of little veins of fat among the muscles. 3. It should be firm and elastic to the touch, and should scarcely moisten the fingers—bad meat being wet and sodden and flabby, with the fat looking like jelly or wet parchment. 4. It should have little or no odor, and the odor should not be disagreeable.

To Clean Cider Barrels.—The *Scientific American* says, put lime water and a common trace chain into the barrel through the bung hole, first tying a strong twine to the chain to draw it out with. Shake the barrel about until the chain wears off the mold or pomace, then rinse well with water.

Cracker Pudding.—Two quarts of milk; ten soft crakers; one cup of molasses; one cup each of sugar, whole raisins and chopped suet. Break up (not pound) the crackers, and put them into the pan with the milk, (cold,) and set the pan on the stove until they are soft; then add the other ingredients. Salt and spice to taste, and bake in a *slow* oven for three hours. Stir once or twice after it begins to bake, and be careful not to let the raisins burn on the bottom. Bake in a deep pan or crock, and be sure not to bake too fast on the bottom.

To Cook Egg Plant.—1. Peel and throw into salt and water for fifteen minutes or half an hour, then parboil until soft and strain through a colander into a baking dish. First put a layer of egg plant, then one of bread or cracker crumbs, with bits of butter, salt and sweet marjoram on every layer, using egg plant for the last. Pour over this half a teacup of water and bake half an hour.

2. Cut the plant in slices a quarter of an inch thick, put them in salt and water until ready for use, to prevent their turning black; have ready a pint of milk with one egg beaten in, and half a dozen crackers rolled fine. Dip the plant, first in the batter, then in the crumbs, and fry in lard or butter ten minutes.

Apple Float.—To one quart of apples, partially stewed and well mashed, put the whites of three eggs well beaten, and four heaping tablespoonsful of loaf sugar; beat them together for fifteen minutes, and eat with rich milk and nutmeg.

Queen Pudding.—One pint bread crumbs, one quart of milk, yolks of four eggs, rind of one lemon, one cup sugar, bake in a quick oven. When done spread over with jelly, beat the whites of two eggs to a froth, mix with it a half cup of white sugar, juice of the lemon, spread over the jelly, set it back in the oven, and brown it.

A Good Breakfast Cake.—Two cups flour, two cups sweet milk, two eggs, a piece of butter size of a walnut. Bake in cups thirty minutes.

OUR BUSINESS NOTICES.

THE RURAL CAROLINIAN is clubbed with the following first-class city newspapers, at the rates annexed :

	Daily	Tri-Weekly.	Weekly.
Rural Carolinian and Charleston News.....	$6 50	$4 00	
Rural Carolinian and Richmond (Va) Dispatch.	6 50	4 00 Semi-W.	$3 00
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Rural Carolinian and Macon Telegraph....	10 50	5 00 Semi-W.	4 00
Rural Carolinian and Columbus Sun.....	11 00		3 00
Rural Carolinian and Mobile Tribune	11 00		4 00

WE GRIND NO AXES.—We insert nothing in our reading matter department for pay, and cannot allow any one to advertise himself or his wares therein. If anything we print for the information of our readers may help any man's business, he shall be entirely welcome to the aid, and we wish no reward for it; but we must judge for ourselves what the interests of the public require us to publish. We desire that our humble opinions concerning persons and things shall have a degree of weight. To have weight, or to be worthy of respect even, they must be unbought, candid and independent.

THE CHINAMEN ARE COMING.—We shall publish, in our next number, an illustrated article on "The Coolies and Coolie Labor."

TWO PAPERS FOR THE PRICE OF ONE.—As an additional inducement to subscribers, we have made an arrangement with the proprietors of the *Charleston News*, by which we are enabled to offer THE RURAL CAROLINIAN and *Daily News* for one year for $6 50, and THE RURAL CAROLINIAN and *Tri-Weekly News* for one year for $4, which is but a trifle above the price of the *News* alone.

TO CORRESPONDENTS.—All articles intended for publication, and all inquiries relating to subjects treated in our columns should be addressed to the editor, and all subscriptions and business letters to the publishers.

AGENTS WANTED.—Canvassing agents are wanted in every county in the State, to whom the most liberal inducements will be offered. For further information, address the publishers.

WANTED.—We wish to obtain one copy each of the Reports of the Department of Agriculture, for the years 1863 and 1864, for each of which we will send THE RURAL CAROLINIAN for one year.

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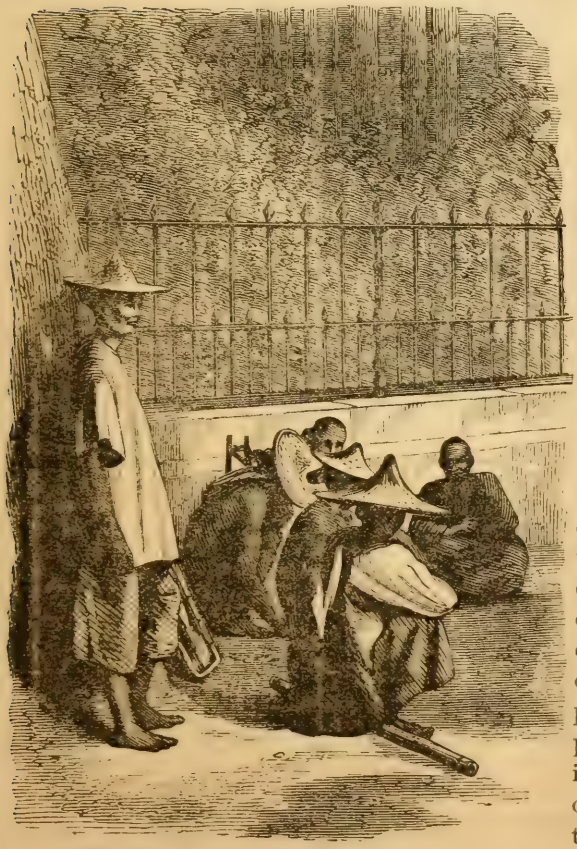
The Coolies and Coolie Labor.



Here we have a group of Chinese laborers, or Coolies, in their native costume, and as they appear when landed upon our shores. After entering upon their duties here, they gradually modify their dress, approximating it to that of the people among whom they live. Our illustration is from a photograph, and was engraved expressly for THE RURAL CAROLINIAN.

We are to have the Coolies among us—right here on our rice and cotton plantations. This is a foregone conclusion. Whether their coming is for good or for evil, may be considered an open question. We do not purpose to discuss it at the present time, but recognizing in all its force "the logic of events," we simply aim to give our readers some

scraps of useful information in regard to the Chinese and their customs, habits and character.

The Chinese form a branch of the Mongolian race, which includes also the people of Japan, Tibet, Bootan and Indo-China in Asia, the Laplanders of Europe, and the Esquimaux of America. Their physiognomical traits are a broad, flat face, with the parts imperfectly distinguished; a short, thick and generally concave nose; small black eyes, the orbits of which rise in an obiique line from the nose to the temple; eyebrows scarcely perceptible; hair coarse, straight and black; beard slight, or entirely wanting; complexion a tawny olive. Compared with the Caucasian or the negro, they are small in stature. They are noted for a half-blind, persistent, mechanical activity, tireless, patient industry, great skill, and a wonderful capacity for imitation, which enables them to learn very readily to do anything they see done, or to copy anything placed before them. In regard to their moral character, we have the most contradictory statements, attributable partly no doubt to the fact that different observers have come in contact with different classes of the Chinese people. Be their morals what they may, they are certainly a wonderful people—wonderful on the score of their antiquity, their anticipation of the inventions of modern Europe, their numbers, (probably more than 300,000,000,) their vast cities, and their accumulations of the results of industry; but their greatness is of the past. For ages they have made no advance. "Four centuries ago," a late writer says, "they were in advance of Europeans in everything that contributes to the comfort or luxury of civilized life; but where are they now? Authors of the compass, they creep from headland to headland in coasting voyages, never venturing to cross the ocean or to trust themselves for many days out of sight of the shore. Discoverers of gunpowder, they supply the world with fire-crackers, while their soldiers fight with bows and arrows, wooden spears and matchlocks. Inventors of printing, they have not yet advanced to the use of metallic type and the power press, but continue to engrave each page on a block of wood and to print it off by the use of a brush. Sufficiently versed in astronomy to calculate eclipses two thousand years before the Christian era, they remain to this hour in the fetters of judicial astrology; and among the earliest to make advances in chemical discovery, they are still under the full sway of alchemy and magic. Their religion is Paganism."

But the great practical question now before us is, "Can Chinese be profitably employed on our rice, cotton and sugar plantations?" Perhaps this question cannot be satisfactorily answered in advance of the experiment, but it may be well to give some degree of weight to the opinions of those who have had experience with them elsewhere, as well as to their general character for industry and the nature of their occupations at home.

The Chinese are, in the main, an agricultural people, and their crops are similar to ours. They grow wheat, Indian corn, barley, millet, rice, sugar-cane and sweet potatoes. They cultivate their land in the most thorough manner, fully appreciating the benefits of manuring and irrigation, but having

no idea of labor-saving appliances, rarely making use of even the plow or the harrow, but doing their work mainly with the spade and the hoe.

The experience in the employment of Coolies in this country has been mainly in California, and the weight of testimony from that region is certainly in their favor. A correspondent of the Cincinnati *Gazette*, after a careful examination of the subject, writes from the Pacific coast as follows:

"California is blessed with gold, and rich soil, and charming climate. Its resources are beyond computation. Its best citizens speak of these, and then say that of all their blessings that of Chinese labor is one of the greatest. The whole business and commerce of the State was languishing because of the scarcity of laborers. But just in the time of greatest need relief came. Women were few in California, house servants could be found for the wealthiest alone. But John arrived, and though he knew nothing of American housekeeping or cooking, he learned both almost with a single lesson. But for John the Pacific Railroad would have been delayed three years. As an artist with shovel or drill, wheelbarrow and cart, he has proved himself unsurpassed. He is temperate, has no rows, is not at home in a riot, has few holidays, boards himself, cooks his own food to his liking, does his own washing, keeps himself scrupulously clean, is always respectful, contented and jovial. Ninety-eight per cent. of those that come here can read and write their own language. Most of them are rapid in figuring. Their children learn our language rapidly; the parents with difficulty, though they soon manage to acquire a stock of words and sentences which answer their purposes. They show a great anxiety to send their children to school where English is taught, though as yet few facilities have been given them, for while they pay full school taxes, they have as yet been furnished but one schoolhouse for forty pupils. As a class, there is none so law-abiding—not even the Americans, and none more honest."

Of the Chinese as house servants, a correspondent in San Francisco says that it is the universal opinion among housekeepers that their conduct and performance are admirable. He adds:

"Chinese servants are very tidy, they like steady employment, uniform ways, and ask few privileges. They are honest, frugal, careful and industrious, and take great pride in the excellence of their work. They do all classes of work that an American servant girl does. There are hundreds in San Francisco who have been in the same family for ten years. They charge a little more than Irish help of a miscellaneous character, but their wages are low for the work they perform. They will not make individual engagements to go East, but prefer to go in parties, for they have to trust to themselves for amusement and company. They do not fraternize with Americans, and never intermarry."

A correspondent of the New York *Journal of Commerce* says:

"It is with deep regret that thinking men everywhere notice the opposition from politicians to the introduction into the South of Chinese as laborers.

"A nation's path to permanent greatness is through the products of its soil. The Chinese are thoroughly instructed in the tillage of the principal articles of export of the South—cotton and rice. The climate of the South is very similar to that of China. Give the South sufficient cheap labor and she can drive every other country from the production of cotton. The lands of no other country can produce as much to the acre. No other cotton has the same length and fineness of fibre.

"The introduction of one million of Chinese laborers would, in a few years, give annually to the world ten millions of bales of cotton, and at a very low price. The amount of rice that could be produced by these people cannot be estimated."

This is one side of the question. Like most other questions it has two sides. The other side has been presented by a writer in the New York *Evening Post*, who has been discussing this matter, deciding against the Celestials and showing them up in no very favorable light. He claims that the experience in California does not furnish an adequate criterion by which to judge of their usefulness in Southern fields. He says they do very well there where they are by steam within easy reach of their homes, and where they are governed by societies by which they are protected in case of sickness or want. But taken into the interior of the country, and bound down to work for a mere pittance, he says they would become lazy and burdensome. He gives an account of Sandwich Island experience, which is not without its lesson. He says:

"About 1852, Mr. Pierce Graves brought two ship-loads of Chinese Coolies to the Sandwich Islands. They were, if my memory serves me, picked up at Swatow, and were to receive two dollars and a half per month and a regularly stipulated amount of rice. In five years they were to be free. Mr. Graves, having previously entered into an arrangement with a number of planters on the island, brought on about four hundred Coolies; and for their passages, including his own commission, he received $100 per head. From the first, these men stated that they had been deceived; that they were engaged but for one year, and that they were to have five dollars per month and a free passage home if they elected to return at the expiration of their period of service. They never worked willingly; they gambled all night, and consequently were incapable of working well the next day. They were great thieves and scamps generally. They never learned to speak English, but picked up a few words of the native language, and consequently made poor house servants."

No doubt much of our success with Coolie labor will depend upon the selection of laborers made in China, and this upon the character and qualifications of the agents employed in procuring them. On this point a correspondent of the *Country Gentleman* has some sensible remarks. We shall do well to heed his suggestions. He says:

"We have been among the Chinese, and can vouch for it that they are just the class that is wanted at the South. They are intelligent, industrious, persevering and temperate. Their great failing is dishonesty and avarice, but we have never known them to steal anything, that if found on their persons or in their huts, could be identified by the owner of the article. Their greed for money tempts them to steal gold dust, coin or anything that is very valuable, portable and easily concealed.

"There are two races of men among the Chinese—the Mongolian and the Malay. The former most nearly approach the Caucasian race, and principally inhabit the northern parts of China and the great centres of industry. The latter are mostly engaged in the seaport cities as seamen and porters, and form the lowest class of laborers in those places. A great deal of the success of the South, in this matter of importing Chinese labor, will depend on the class of laborers they get, and the conditions under which they employ them. If the business is to be conducted as is proposed by certain papers, and the

men obtained from Swatow, the great centre of piracy on the China seas, it would be but letting loose a horde of murderous Malays on the community. But if the planters and proprietors of the South will themselves take the matter in hand, charter vessels to bring out the laborers, and employ an honest and intelligent man to superintend the business, one who has some knowledge of the country and its language, they will then get the right class, and ensure all the elements of success. Give them a free passage, with the promise of fair wages when landed, and require them to work for a certain time and a certain sum to be deducted out of their wages each week or month until the actual cost of their passage out is repaid, and they will work on steadily and industriously till they have earned enough to go back to their country and pass the rest of their days as small proprietors of shops or gardens, or live at ease at home. There is little fear of any of them troubling themselves about political matters, or becoming naturalized citizens of America."

These, we believe, are true words. It is not enough that we get Chinamen here, but we must select them from the right class, and having them here, we must treat them well and gain their good will, so that they will work cheerfully, and therefore efficiently. We cannot prevent Chinese immigration if we would, but we may, if we are wise and vigilant, do much toward directing it and determining its character.

About Fertilizers.

It is encouraging to notice the growing disposition in the South to adopt what is called the system of high culture. We have been slow in arriving at this resolution, because of good virgin soil, abundant new land to open when the fields lost their freshness, and slave labor, which was deemed cheap, to employ in the clearing. These things have naturally changed. The freedmen, requiring payment in kind or in money for services, are pressed to make in return the most that is possible. There is no longer time to open so much new ground, to build so many expensive new fences—in a word, to work in any way, except to promote the main chance. And this main chance, or speedy cash result, consists in first driving down the stakes on the very spot one occupies, then laboring around them, with every effort of brain and muscle, renovating the worn fields by careful tillage with good implements, and by saving or buying and applying home-made and commercial fertilizers.

Our people have been, and are yet, to a great extent, too careless in their attention to making and preserving manures. Much of the very essence of these has been wasted by exposure, in open yard, to the sunshine and rain, for a good manure is usually estimated everywhere by its ability to yield ammonia, and this substance, arising from certain vegetable and all animal decomposition, is readily dissolved in water, and as promptly lost by drainage or by evaporation into the air, under the heat of the sun, and shelter was needed to protect. The roughest and cheapest constructions would suffice for the purpose. Clapboards, easily procured from the woods, and a few posts to

support, furnishing equally with plank and posts and frames and nails an ample cover. The stables, lots and pens are usually supplied with straw or leaves, but if there were mixed with these top soil or red clay, or better still, creek or pond mud, or peat, all would be converted into an excellent compost, almost equal in quality to the genuine manure, and largely increased in quantity. The bones from the kitchen should be buried in carefully sheltered beds of ashes—ere long they would decompose, and give rise to a circle of new and valuable combinations. A bank of peat and straw should be made in the garden, and all soapsuds, dishwater, cabbage and other stalks and other refuse, the slops from the bed chambers, should be thrown upon it, with occasional stirring. Woollen rags, of no value at the paper mill, contain large proportions of nitrogen and phosphate of lime—forty times greater than stable manure—may be composted with much benefit. Nay, even the clippings of the finger nails and the trimmings of the hair of the head could be turned to account. Nothing whatever that can afford plant nutriment should be cast away as useless. To gather all these materials would demand slight attention to remember, and no exhausting effort of energy to employ.

A farm, in Ireland, of 14 acres, paid rent, kept 4 cows and a horse, and supported a family. Another, of 8½ acres, paid $50 rent, fed two cows and the family, and yielded a net return of $200. In Belgium, 2½ acres sustained a farmer, his wife and three children, and a hog and a cow. The secret of these results is to be found in manure—the foundation of all good husbandry, and next to labor, the great element of the prosperity of the farmer.

But for the largest crops, the farmer with his ordinary routine of operations, cannot make compost enough to enrich all his lands. To do so he must have capital with which to largely increase the number of his stock; and to appropriate labor, teams, and carts or wagons, expressly for the purpose. Our people are bankrupt, compared with their condition previous to the war. They can economize all the means alluded to above, and should universally begin the practice, until prosperity dawn upon them once more; they should resort also to commercial fertilizers. The vast number of these that are advertised, demonstrates that they are in great demand, and that generally they have handsomely reimbursed the purchasers. Complaints are sometimes heard of fraud in their manipulations, and no doubt, as in almost all articles, particularly of prime necessity and universal use, there have been adulterations. This admonishes to greater caution in the selection of the article, or in the choice of one's factor, or in both the one and the other.

That a genuine parcel of Peruvian guano has, on almost all kinds of soil, increased the crops from 100 to 150 per cent. is vouched for by ample testimony on both sides of the Atlantic. That superphosphates sometimes failed of the best effects, is reasonably due to the abundance of that substance in the land to which they were applied. It may be the same with all the merely specific manures—containing two or three of the elements required for the sustenance of plants, and excluding half a dozen others, equally essential to their growth. Mixtures have been applied successfully, to obviate this difficulty—

some comprising all the important materials of nutrition. These are becoming known, elaborated by costly and multiplied experiment, and divulged for common benefit in the true spirit of benefaction. Professor Leibig, of Germany said that Peruvian guano, invaluable as it is, tended, when used alone, to the development of leaves and stems, being rich in ammonia, rather than to the fullest formation of the seed; and suggested that bone phosphate, the fruit engendering principle, should be united with it, to make a perfect fertilizer. This has been done with eminently compensating results. Salt has been added, giving an additional supply of the alkaline base soda, and of chlorine, very sparingly required, and allowing a play, probably, of beneficial chemical affinities. The soluble Pacific has given satisfaction, alone or further mixed. The Baugh raw bone has done the same alone, or united with a guano. The following is an experiment with the last, to test it comparatively with Peruvian guano. The land is fair cotton soil,—a kind of loam, implying a good intermixture of sand and clay:

		Seed Cotton per acre.
No manure		887 lbs. "
Peruvian Guano	175 lbs. per acre.	1,328 " "
Baugh	175 " "	1,489 " "

Here the superphosphate surpassed the guano, because the land needed just this element, and not the superabundance of ammonia contained in the guano.

But whatever may be omitted, let no one neglect to manure every hill of every seed that he plants. The return will far more than repay all the outlay of expense and labor. The rich land for one plant may be supplied with ingredients to render it rich for another, or for all others. The old and poor may be rejuvenated, and even be made to surpass its virgin fertility. Professor Mapes owned a piece of land which failed to grow corn. He applied to it a fertilizer, at a cost only of $2 per acre, when the yield was over fifty bushels the first year! Do likewise, ye farmers, who may be struggling for an ash cake on a clay hill, or a sandy flat, and put ample provender in your mouths and money in your pockets.

M. C. M. HAMMOND.

Beech Island, S. C.

Wood Ashes.—Wood ashes are exceedingly valuable for sandy soils, and are beneficial on all soils; are especially valuable in their application to potatoes, carrots, corn, peas, beans, clover and the grasses generally.

As a top-dressing to grass lands it roots out the moss, and promotes the growth of white clover. Upon red clover it is better to be mixed with one-fourth of its weight of gypsum.

Influence of the Moon on the Weather.

The traditional belief that the moon exerts an agency in producing rain, is found more or less general among all people. In her far-off home she is not only held responsible for the character of the weather, but is very generally supposed to exert a quiet and inexplicable influence on many other matters that happen on this planet of ours. She is not only believed to exercise an influence on the preservation of timber, the growth of plants, the curing of bacon, the complexion, putrefaction, etc., but is by many supposed to exert an important influence over human maladies, both physical and mental. Indeed, the word *lunacy* has its origin in this supposed influence of the moon (*luna*) in producing this state of the mind.

We propose to examine the foundations for this very general belief. This, as all other questions proposed, presents itself in two aspects: First, as a question of fact; second, as a question of science. The question of fact must be settled first.

Is, then, the probability of fair weather or foul weather greater at one particular phase of the moon than at any other? If recorded observations have proved a coincidence between clear weather and one phase of the moon, and wet weather and a different phase, then it becomes the business of the scientific man to explain the cause of this coincidence. But the general existence of the belief does not make it a fact. That only shows the tendency of the mind to rest satisfied with inferring a cause, however remote and unsatisfactory, and may be classed with that tendency which exhibits itself in attributing to supernatural agency, and being satisfied therewith, the rapping of tables, the motion of chairs, etc. Suppose we had recorded in one column all the changes of the moon for a hundred years, and in a parallel column opposite these epochs, the state of the weather, an examination of these two columns would settle the matter as a question of fact for that particular place. Now this has been done at many places.

Observations near Munich, in Germany, give the number of rainy days in the growing, to the number in the waning moon, as 845 to 696, or as six to five nearly. This would indicate that it rains oftenest the first half of the month. At Montpellier, in the south of France, observations for ten years showed nine rainy days in the growing to eleven in the waning moon, a result *just opposite* that found at Munich, about 300 miles distant. Contradictory results are shown at different places, showing that *local causes* have more influence in producing rain than the phase of the moon.

Now, in regard to the influence of the moon's changes on changes of weather, the records at Vienna show 100 new moons gave fifty-eight changes of weather, and 100 full moons sixty-three. This result is contrary to the traditional belief; but at Venice it was found by including two days before and two after new moon, making five days, that changes of weather were brought with six new moons out of every seven; thus corresponding with

the belief that we are more liable to have a change of weather at the change of the moon, and clear weather at the full moon. The sailors have a saying that the moonlight "eats the clouds," and thus at full moon produces clear nights. Sir John Herschel speaks of the "*tendency to disappearance of clouds under a full moon*" as a meteorological fact, of which he has satisfied himself by long continued and registered observations. He states that the only influence the moon has over the weather that "can be reckoned upon with any degree of certainty, is its tendency to clear the sky of cloud, and to produce not only a serene, but a *calm* night, when so near the full as to appear round to the eye." Humboldt also speaks of this tendency of the full moon to clear the sky of clouds, as a fact well known to pilots and seamen of Spanish America. M. Arago, the French astronomer, showed from registers kept for a long period, that somewhat more rain falls near the new moon than does near the full. This is a natural consequence of an excess of cloudless sky about the full moon, and forms, therefore, part of the same fact observed by Sir John Herschel.

The mass of evidence seems to establish it as a *fact* that we have a preponderance of clear nights and days during the full moon, and as a consequence an excess of cloudy or rainy days during and about the new moon. Now, why is this? What is the scientific explanation? Where is a reason for it? Every one knows that heat will dissipate vapor by increasing the capacity of the atmosphere to absorb it. Now, when the moon is full, the earth gets the heat not only from the sun, but also receives the reflected heat from the moon, and though the heat reflected from the moon is so small as to be scarcely appreciable by instruments near the surface of the earth, this does not show that a small amount is reflected. It only shows that this reflected heat of low intensity is absorbed in the upper or cloud regions of the atmosphere, and is expended in producing the very effect that has been observed, viz: of dissipating the clouds and producing fair weather. We would infer, therefore, from an application of these principles, that there would be a "tendency to disappearance of clouds under the full moon."

The English gardeners believe that the *light of the full moon* which occurs between the first of April and middle of May exercises an injurious influence upon the young shoots of plants. They say the young buds exposed to this light of the moon *redden*, (hence they call it the red moon,) as if killed by frosts at a time when the thermometer stands many degrees above the freezing point, but that if the light is intercepted the buds do not redden, though the thermometer indicates the same temperature. Nothing is easier than the explanation. When the night is clear, the buds, being powerful radiators, lose heat rapidly and are reduced below the freezing point and injured. This more generally happens when the moon is full, for then there is a tendency to a clear sky.

In our latitude we fear the effects of the frost at the full moon in April. We have at hand no data of long continued observations to show the probability of frost during the April full moon; but from the general principle that

there is a tendency to a clear sky, and therefore calm night during the full moon, we would infer an increased probability of frost if the temperature at the season approximate to that required to produce it.

There is a tradition that we will only mention to show its absurdity, that the crescent of the new moon when nearly horizontal foretells a dry month, and when nearly vertical a wet month; when her horns are down she is called a dripping moon. Now, the position of the crescent depends entirely upon the position of the plane of the moon's orbit with reference to the line joining the earth and sun, and can in no possible manner affect the temperature or moisture of the atmosphere.

The traditions which teach the times to fell timber, kill pork, plant, etc., are too absurd to need refutation in these pages. When believed it arises from a few coincidences. Cases which prove the sign are noted; those which do not are neglected.

We had intended to discuss the supposed influence of the moon on human maladies, physical and mental, but the length of our article admonishes us to close.

W. L. BROUN.

Athens, Ga.

Corn Culture—Mr. Dickson's Plan.

During our visit to Mr. Dickson's plantation last summer, we gathered some interesting facts in regard to his system of farming, a portion of which were given to our readers in our October number, and have been extensively copied throughout the South. Our attention, in the article alluded to, was more particularly directed to cotton. We purpose now to speak of his mode of planting and working his corn crop.

WHEN AND HOW TO BREAK UP THE LAND.

It should be remembered that in Mr. Dickson's system of rotation, corn follows cotton. He expressed the opinion that, as a rule, the later the land is broken up the better for both the land and the crop; but where a large area is to be planted, the plowing must be commenced by the first day of January in his latitude—earlier further South.

Mr. Dickson's plantation is situated in a rolling country—hilly, perhaps, it may be called—and he lays off his land so that the teams go round the hills on a level, the dirt falling down hill. "A team," he says, "will break up the soil nine inches deep in this way as easily as it could seven inches on level ground." He, we think, uses two horses to the plow, one team following another, and all the time going round the circle. If the land is to be subsoiled, a subsoil plow follows each turning plow. The ground is then ready for

LAYING OFF AND PLANTING.

Mr. Dickson's directions for laying off and planting, are as follows:

"Lay off furrows with a long shovel plow, on a level, seven feet apart.

Commence at the opposite end, with a longer shovel, and open out the same furrow. The reason for this is, you get up to trees and stumps, and make a better finish at the ends. This furrow should stand open seven or eight inches deep. Whether you use compost, cotton seed or guanos, let each hand have his three foot measure, and deposit the manure in the bottom of the furrow, just three feet apart. Then drop the corn within three or four inches of the manure, one or more grains, as is your custom—dropping on the near side of the manure, as the dropper goes; then, with a very light harrow, cover the corn one or one and a half inches deep. The harrow should go the same way the dropper goes, to prevent from pulling the manure on the grain."

Low planting, but not deep covering, it will be perceived, is the rule, and we are able, from personal experience, to endorse, to the fullest extent, the principle involved, though we have not been accustomed to make our furrows quite so deep as Mr. Dickson does. To *cover* deep, however, is to lose the advantage of the low planting, for the corn will, in all cases, *throw out its roots near the surface.*

WORKING THE CROP.

Mr. Dickson says that he is opposed to earthing the corn as soon as it comes up. In the latitude of Middle Georgia, he usually finishes his first working from the 20th of April to the 10th of May.

For the first plowing he uses a heavy twenty-two inch sweep, with the right wing so set, that its back end will not be more than one inch above the ground. This is to run near the corn, and should fill the furrow within one or one and a half inches of the general surface. He breaks out the middles with the same sized sweep, with the back of both wings turned up. If the plowing is well done, four furrows will finish out—four hands completing fourteen acres every day.

For the second plowing, he has the wing of the siding sweep turned a little more than half up, and runs close to the corn, leaving nothing for the hoe; for if the plowing is well done there is no use for a hoe. He breaks out the middles, with three furrows, to make a good place to plant peas. He plants peas from the first to the 20th of June, in his latitude. This is the way he does it: After the second plowing, he runs a shovel furrow in the middle between two corn rows, and drops one bushel of peas to every eight acres—say six to eight peas to a hill. Sixteen acres per day can be planted, and will use two bushels to each plow. He covers with a harrow.

For the third and last plowing, he pairs his hands, putting one to side the corn and one to side the peas. The hand that sides the corn uses a twenty-two inch sweep, right-hand wing well up, and runs close to the corn—not going more than a half inch deep, and thus cutting no corn roots. The left wing should be nearly flat. The hand that sides the peas uses a heavy twenty-six inch sweep, with the right wing set at medium height, runs it near the peas, so as to fill the pea furrow entirely up. The left wing should be up, to push the dirt near the corn. This is the last plowing, and should leave the field *smooth* and entirely free from weeds and grass.

For manure he uses the Dickson Compound, described in our October num-

ber, and on his pine land (some of it very poor and seventy years under the plow) averages from twenty to twenty-five bushels of corn to the acre, *never failing to make a crop*, be the weather wet or dry. What is the secret? Deep breaking up; liberal manuring; shallow, level culture! These are the means by which a good crop of corn can be made *every year!* When our farmers have all learned this simple lesson, (and it shall not be our fault if they do not learn it,) there will be no more failures of the corn crop.

Southern Farming and Farm Labor.

Mr. Editor: The truism has become trite, that we live in an age of progress. The strides of Science have shaken the faith of many good people. Science has anatomically extracted from the physical man a nervous stature, assimilating his spiritual being. Science, by a diagnostic investigation of the vegetable kingdom, has discovered the wants, and supplied the food, of every variety of plant. Science has disembowelled the earth, that the mineral kingdom may give up its hidden treasures for man's benefit. Science has mastered all the elements of nature, compelling each of them to aid in the dissemination of knowledge. Science is steadily, but surely, advancing towards that goal whence man may see, what spiritual beings doubtless see, the perfect adaptability to each other of all the various minutiæ of this vast physical and moral universe.

In this grand scientific drama, where the inventions of man are a second creation, I often wonder what character the oppressed South is playing. Politically, we may be said to personate Night, and a cloudy night at that. Our manufactural existence is almost in embryo, while, commercially, we are simply a robust youth of stout heart and clear head. But, alas for my calling, what are we *agriculturally?* True, in one respect we are the keepers of the treasury, but in all others we are simply spectators in the immense auditory.

To exchange metaphor for practicalities, what are Southern planters doing for the science of agriculture? Echo answers—What? Here and there individual planters reap the rewards of scientific research; but, throughout the South, the mass of planters are like their neighbors—blind leaders of the blind, and all hastening into the ditch of poverty. Premises are becoming, and have become, dilapidated; fences are decaying and have decayed; old lands are "thrown out" to be washed away; the miserable system of up-and-down hill plowing is hastening arable lands to sterility; virgin forests are being felled that their alluvial soils may be scratched into barrenness; and oftener than otherwise the common comforts of life are ignored, that a penny may be hoarded to be squandered by future generations.

This picture is true of most Southern plantations, and will be true during this generation for two reasons: First, we are not a reading people, but rely

for our advancement upon experimental knowledge—a tree of slow growth—and living practically up to the adage, "where ignorance is bliss, 'tis folly to be wise."

Secondly, our method of planting is a sort of copartnership between employer and employee—between capital and labor—contracting to "run the machine" for a single twelvemonth, where intelligence is subservient to ignorance, and capital is swayed by poverty.

Annual and continued impoverishment must be the result of such a system. Science may develop and develop again all the agricultural wants of our country; but, unless Art applies her teachings scientifically, no benefit will accrue to agriculture. An average crop in the South is but little beyond the spontaneous production of our climate and soil. Nor can we ever enjoy a just proportion of the advantages of scientific developments as long as the propelling power is the muscle of the laborer, and not the intellect of the employer.

The uneducated negro, reared in bondage, where the result of his year's labor seldom gave him a thought or required of him the practice of observation, cannot and should not be expected to cope with even an uneducated white man, who has been accustomed from childhood to control, and whom circumstances now compel to practice a higher order of farming. And yet many, perhaps a majority of planters, contend that the stimulus of a portion of the crop is more effective than wages in money. This is undoubtedly erroneous. If the laborer is only stimulated by his share of the crop, the employer has no control of his time beyond his specific crop, else the laborer is more than worthy of his hire. Subsoiling, under-draining, making manure, purchasing fertilizers, erecting buildings, and general improvements, are all labors the "cropper" should never be expected to perform, unless he is paid a heavier percentage of the crop, than if he were employed simply to pitch, cultivate and harvest a certain crop. And what planter can tell in January how or in what manner he intends occupying the idle time of his employees during the year, or what that idle time will be worth to him?

No, Mr. Editor, I can discover no possible method by which our lands can be improved while this copartnership arrangement continues. But I can easily see how they will annually become poorer until finally they will be worthless. During this deteriorating system of agriculture the only alternative the planter has is to *increase* his planting area to the mule, and not *decrease* the area to the hand. The freedman, who this year has cultivated fifteen acres of land, will bestow less labor next year on twelve acres, if limited to that area, simply because he contracts to furnish as a copartner a certain *quantity*, and not an improved *quality*, of labor. Extend his quantity of labor over a few more acres than bargained for, and he will encourage the crop with "a lick and a promise," producing at harvest time the spontaneous result spoken of above. Diminish the area, and the quality of the labor is by no means improved. For this he is not to blame simply because he has the muscle and not the brain. Let the planter buy his time and control that

muscle, and improved agriculture will soon enable the employer to increase the moneyed wages already so liberally given.

To close somewhat abruptly, Mr. Editor, can you not induce some of your correspondents to give us an article on Plantation Economy, including the management of laborers and the method of improving lands under this contract (part of the crop) system. D. WYATT AIKEN.

The Cultivation and Production of Cotton.

In view of the condition of labor in the South, both present and prospective, it is evident that, if the supply of cotton from this country is to be materially increased within the next few years, this result must be accomplished through greater carefulness and economy in the management of labor and the cultivation of the land.

Before the war the upland cotton-fields were year after year "cropped" under a system of superficial cultivation, and it is only because of the slow exhaustive nature of the cotton plant and the great natural fertility of the cotton belt, that these lands were not completely exhausted long ago. Fortunately, however, the cotton fibre, which should alone be removed from the plantation on which it grows, absorbs but six and one-half pounds per acre of the mineral properties of the soil, calculating the yield at one bale to the acre. In comparison with wheat, which absorbs 17-65 pounds to the acre, potatoes, which absorb 163 pounds, or beets, which require 458 pounds of the most valuable properties of the soil, it will be seen that the amount taken up by the cotton fibre is small; but even with this slow exhaustion of these necessary mineral elements, the time has come when the use of fertilizers to restore the land to its original fertility is imperatively required. Even in the rich bottom lands, where as much as two or two and one-half bales have been raised to the acre, and with little or no cultivation, the custom of forever taking away from and never returning anything to the soil must ultimately impoverish it. These facts are becoming more and more evident to planters throughout the South, and during the past year fertilizers have been more extensively used than ever before. On account of the peculiar properties of some of these manures, however, it is said that, during the excessively dry summer we have had, injury has resulted rather than benefit. But where this has happened we think it may be traced to the properties of the fertilizer, and is certainly no argument against the scientific cultivation of the soil. To understand then what are the best fertilizers requires a careful study of the nature of the cotton plant and of the manures generally in use obtainable at a price which will enable the planter to apply them freely to his land.

The requirements of cotton may, of course, be correctly determined by ascertaining what are its constituent parts. An analysis of the fibre shows that 100 pounds of cotton lint contain one and three-quarter pounds of mineral matter in the following proportions: Potash, 41.8 per cent.; lime, 19.8; magnesia, 11.2; chlorine, 7.8; phosphoric acid, 6.4; soda, 6.1; sulphuric acid, 4.2; oxide of iron, 2.4; silica, 3. It is evident, therefore, that manure, to be thoroughly adapted to cotton, must contain these properties in a soluble condition. The most important are potash, lime, magnesia, phosphoric and sulphuric acids, all of which are essential, and, when lacking, must be supplied

to the soil. These necessary ingredients may be found most readily in the following available manures: cotton seed, natural phosphates, guano, superphosphate, bone dust, ashes, salt, stable manure, lime, and land plaster. By far the most valuable of these is cotton seed, which contains the same mineral properties as the lint, and in much larger quantities. As there are 300 pounds of seed to 100 of the lint, the mineral matter abstracted by the plant can be returned to it through the seed, which contains the bulk of that taken up during the growth. The usual mode of preparing the seed for manure is to put it in a water-tight basin prepared in the ground and leave it to rot in the weather. After it is thoroughly decomposed it can be used for grain, corn, or cotton, and if mixed with bone dust, gypsum, or any good mineral fertilizer, it becomes very rich. This manure is in general use through the uplands, but the modes of preparing it are often so wasteful and injurious as to deprive the planter of much of the profit and advantage that would otherwise result. Experience has proved, however, that cotton seed, mixed with bone dust, stable manure, muck, or gypsum, will greatly improve the soil and increase the yield of cotton. It is essential, also, that the planters take better care of stable manure, which is valuable on any kind of soil and for any kind of crop. The barnyard is a thing hitherto almost unknown in the South, and the rich beds of manure which the Northern farmer accumulates from year to year are seldom or never seen on the Southern plantations. It is also essential that the black muck from the swamps shall be more generally employed. The character of the soil of the cotton belt is, in great part, light and sandy, and, with but few exceptions, needs stiffening. Many sections abound in swamps, where the richest kind of vegetable mould can be procured in unlimited quantities, and a few enterprising planters are already beginning to avail themselves of this cheap fertilizer, with profit to themselves and advantage to the soil under cultivation.

Among the available mineral fertilizers the cheapest, and, in some respects, the best, are the natural phosphates from the Ashley, Cooper and Wando river regions of South Carolina. The Ashley beds, which were the first discovered, are the most extensive and valuable. These deposits extend over a surface of several miles square; the strata generally lying within two feet of the surface in a light soil, and being quite accessible from their proximity to the Ashley River and the Charleston market. The analysis of these phosphates show them to contain lime, sulphuric and phosphoric acids, but no alkali, which must be supplied when used on land not already containing it in sufficient quantities. In this respect it resembles guano, and should, therefore, be mixed with other fertilizers supplying silica and potash, which are rapidly exhausted from the soil when guano is used alone. The alkali and chlorine may be imparted to the soil by the use of common salt and ashes, thus making a fertilizer as nearly perfect as possible; but owing to the present high price of salt it is in most instances placed beyond the reach of the planter. It is possible that the lately discovered "potash salts" of Germany will soon be introduced into this country, and as we suppose it is not covered by the tariff, it may be obtained at a price which will place them within reach of every Southern planter.

In treating of the subject of manures and fertilizers, however, it is necessary to bear in mind the difficulties in the way of generally distributing phosphates, guano and other commercial fertilizers throughout the cotton country. The railroads are comparatively few in number, and on such as are now in operation the rates are high and facilities for freight transportation extremely limited. In view of this fact, it is necessary that a large proportion of the planters, whose lands are distant from railroads or navigable rivers, should

depend mainly on such manure as they can make on their farms or procure from the swamps. Both of these have been in former years quite generally neglected, although they should be regarded as a main dependence. An eminent chemist, of extensive experience and observation in the Cotton States, has given it as his opinion that the black muck of the swamps, which can be procured anywhere in the South for the cost of carting it a short distance, possesses many of the elements most needed to improve the character and stimulate the fertility of the light Southern soil. With a proper system of drainage, thousands of acres of this rich mould might be made available for fertilizing purposes.

Under the old system of labor existing before the war the method of cultivation adopted was, as a general rule, wasteful and ineffective. In but few instances did the proprietors of the soil know or care much about the practical management of the plantation, preferring to leave it to irresponsible overseers, whose interest it was to get the largest possible crops with the least trouble to themselves. As a consequence, but few improvements were made in farming implements or machinery, and everything was of the most primitive and inferior description. A wretched system of surface culture was followed year after year, and the land, rapidly exhausted, was abandoned for new soil as soon as it ceased to yield profitably; manuring was seldom resorted to; subsoil plows were unknown; and little effort was made to improve the quality of the lint by experiments with seed imported from foreign countries or procured from other sections of the South, as has been done with wheat and other cereals in the Northern States. Under the present condition of affairs, however, the necessity of economizing labor has compelled the planters to farm on very different principles, and to make the yield as large as possible from the limited acreage now under cultivation. Experience has shown that cotton, like all other products of the soil, thrives best when cultivated most carefully. All lands in which it is planted must be subsoiled to the depth of eighteen inches, at least. By furrow planting and careful cultivation it has been found that the fruit on the plant can be largely increased. In a word, experience has shown that the size of the cotton plant and the number of pods it holds are in direct proportion to the richness of the soil and the care with which it is cultivated, and hence with our limited labor supply the extent of our crop for the next few years must depend very much upon careful cultivation.—*The Chronicle.*

How to Manage Bones.—A correspondent of the *Journal of Agriculture* gives the following as his experience every year for the past ten years, that being as often as he could collect bones enough to fill a tub:

With a sledge hammer break the bones into pieces of one, two or three inches, take a hogshead tub, put two or three inches of hard wood ashes, the same depth of bones, then ashes and bones until full, pound or press solid as convenient, fill with water or urine, all that it will absorb. If done in the spring or summer, by the following spring it will shovel out decomposed, the bones being as soft as chalk. Then add all your hen manure, shovel and rake it over once a week for three or four weeks before planting time; by that time it will be finely powdered. Put about equal to a handful of compost into a hill, for corn, potatoes, squashes, melons, etc., when it will be found to forward the crops to a wonderful degree.

Grasses for the Clay Lands of the Carolinas.

Mr. Editor: A few days since, while I was in Charlotte, N. C., I met a friend of your Magazine. Until then my attention had never been called to The Rural Carolinian. He was so solicitous for me to write you on a subject which has been my specialty, that I at length consented to do so, with the hope that the results of my experiments might benefit your readers.

Your friend said that the subject of grasses was exciting much inquiry, and though much had been written advising the seeding of grasses, few knew what species of grass to use, how to prepare the land, when to sow, and, chief of all, what grasses were best adapted to the Carolinas.

I will begin by informing you that I removed to this point from the Valley of Virginia, hence am familiar with the grasses of that section, and have taken some pains to introduce and grow several varieties at my present home. You can form some idea of the extent when I inform you that I have now *upwards of eighty acres* well set in clover.

The best improver of land, the best green food for cattle, horses and hogs, and the best fertilizer for wheat, is red clover. This will grow to perfection in red clay in this belt of country. It must be sown on fertile land, well pulverized by the harrow; in the spring on land seeded in oats. Immediately after the oats are harrowed in, sow one bushel clover seed to six acres, and take a light one-horse brush and slightly brush them in. Clover should not be pastured at all the first year, and it would be decidedly more remunerative if it was always cut and fed to horses, cattle and hogs. Mr. Ruffin, of Virginia, recommended the sower of clover seed to take a board (4 feet long and 6 inches wide) in his left hand, holding it parallel with the ground in front of him, and to take as much seed as could be held between the thumb and two fore-fingers of the right hand, and with every step to throw the seed against the board, in a land six feet wide; stakes to be used in measuring the land, and moved when the land is sowed. Some sow as they do turnip seed. Either way will do, so a sufficiency of seed is sown. If by chance a land should be left out or missed in the sowing, by cutting the clover when the seed matures, and placing the clover hay in the bare spots, another year will see it covered.

The only objection I have to clover is that it runs out in a few years. This, however, can be obviated in this wise: When clover begins to fail, fallow the field with a two-horse plow, (this will sink the clover seed very deep,) sow down wheat, and my word for it, that a clover sod is the best fertilizer for wheat. Having obtained one crop of wheat from this field, I would advise that the field be again fallowed for wheat with a two-horse plow; this process will bring back to the surface the clover seed, which has not suffered a particle by being buried one year, nor will suffer by being buried five years. By repeating this process, one need never run out of clover.

For hay I do not like clover, unless it be mixed with other grasses. Why?

Because the *second* crop of clover salivates; because in hauling clover after it is cured it will shatter and leave nothing but stems; and because when one portions off a field for upland hay, he wishes it to continue as such for at least eight or ten years. For reasons which I will state, I would advise that clover be sown at all hazards, but that it be mixed with other grass seeds, so that when the clover was near spent the other grass or grasses would take the field, and because the grasses I recommend will, conjointly with clover, add to the fertility of the soil, besides making the very best hay, and at the same time continue to hold their own long after clover has disappeared.

I have seen orchard grass growing in a field, or rather lot, in Mecklenburg County, which was sown thirty years since. Baxter S. Moore, Esq., near Charlotte, has as fine an orchard grass plot as can be exhibited in the grass plains near Lexington, Ky. Indeed, there is no doubt but that orchard grass is peculiarly adapted to our section of country, and, like clover, will grow wherever good wheat can be produced. Hence orchard grass should be used by all means, as it will certainly grow to perfection, and pay as well per acre as any acre planted in cotton or corn.

Orchard grass can be sown either in October, November or with oats in spring—quantity per acre, whether with or without clover seed, (I prefer both sown together,) one bushel and one peck. This grass will, if the soil is good, grow three or four feet high; is easily gotten rid of by the plow, and makes a hay next to Timothy. Here I will remark that Timothy impoverishes land, and cannot withstand a heavy drouth. Kentucky blue grass is unsuited to our soil, though you can discover it early in the summer or spring if you will look in fence corners or at the foot of a black-walnut tree.

There is another grass to which my attention has been called within this year, and which meets with so much favor with those who have tried it on the exhausted clay lands of Eastern Virginia, that I am forced to believe that it is the grass for our section. I will briefly state the features of this grass: This new grass is styled Evergreen Grass, or Dog Foot, (I do not know its botanical title.) One bushel per acre is the amount to sow. It is almost a perennial. It resists drouth most successfully of all grasses. It shows itself through almost the entire winter. It requires only moderately fertile land. Soil which will bring fair oats will produce it. It makes an excellent green food for stock, as well as A No. 1 hay. Two crops of hay per annum is the yield. It is easily gotten rid of by the plow. It grows as high as orchard grass. It recommends itself to every farmer who wishes to set in grass lands which to him are now utterly worthless. In sowing, use the same course recommended for sowing orchard grass, (when sown alone.)

My observation and knowledge on this subject induces me to urge the farmers of the South, who see ruin in the course heretofore pursued—that of going to the corn-crib for every particle of provender fed—to use the above-mentioned grasses.

I did not know until a few days ago that Evergreen Grass had been experimented with in this State. I learn from Robert F. Davidson, Esq., of Char-

lotte, that he has used it most successfully in the past, and will sow some this fall. I know of fifty bushels which have been ordered by farmers near Charlotte this fall. I will sow fifteen bushels myself. MORE ANON.

[We regret that this correspondent (from whom we shall be glad to hear often) does not allow us to give his name to our readers. He is well known as a trustworthy gentleman and a good farmer.—ED.]

Making and Saving Manure.

The wise and provident farmer should be continually accumulating manure. Everything that has the least value as a fertilizer should be carefully collected and preserved for application to the soil; and it is astonishing how much that is generally allowed to "waste its sweetness," not "on the desert air," but right under the noses of the farmer and his family, about the house, may thus be converted from a disease breeding nuisance into a source of health, pleasure and wealth. The hen-house, the privy, the wood-shed, the sink-spout, the ash-heap, the sweepings of the yard, the slops from the chamber, should all contribute to the compost heap. Muck should also be drawn from the swamp and piled for seasoning; leaves should be gathered from the forest and from the fence corners; old plaster, bones, refuse salt, shells, and all kinds of animal and vegetable matters, that cannot be otherwise made use of, should be composted. Do you say these are little things? Small as they are, they often make all the difference between success and failure in farming.

We advocate the use of commercial fertilizers, but first let every farmer make all the manure he can at home. Hints on the subject of making and saving manures, as well as experiments in their use, are wanted from farmers all over the country. In the meantime, we give here several suggestive items, gathered from various sources:

A HOME-MADE FERTILIZER.

J. L. Campbell, Washington College, Va., communicates to the *Planter and Farmer* the following:

"Just before the beginning of the war, while I was farming on a small scale, I tested a combination of fertilizers, which gave most satisfactory results. The application was made to a corn crop in two consecutive years. During the second year it was also applied to a clover lot, with far greater benefit than resulted from a mixture of ashes and plaster alone, applied on a portion of the same lot, and in equal quantity.

"The ingredients were ground bones, (raw bone phosphate,) plaster, ashes and salt, in the following proportions:

Finely ground Bones	200 lbs.
Ground Plaster	100 do.
Leached Ashes	350 do.
Common Salt	50 do.
Total	700 lbs.

"This mixture was applied to two acres, and dropped in the hill with the corn. The whole cost was $6 50.

"On very light soils, the addition of 100 lbs. of Peruvian guano to the above compost, would doubtless improve it. The quantity would then be sufficient for two acres and a half. But even with this addition, the cost would still fall far below that of many fertilizers now in use, and which contain less variety, and a smaller proportion of real plant food."

PREPARATION OF NIGHT SOIL.

The following is a method of preparing this manure, in which its value is fully retained, while the offensive odor is effectually destroyed. We do not know to whom to credit the paragraph:

"To every one hundred pounds of night soil add seven pounds of sulphate of lime (gypsum) in powder; a double decomposition will ensue, and the result will be, instead of sulphuret of lime and carbonate of ammonia, carbonate of lime and sulphate of ammonia, the latter a soluble salt that cannot be volatilized. It may now be mixed with other composts, or dried any way that the farmer likes, and applied to the roots of the vegetables, to be again transformed into bread, butter, cheese, etc."

A CHEAP FERTILIZER.

For several years past Mr. L. E. Metcalf, of Franklin, Mass., has used a compost of salt ashes and plaster on his farm crops with the most satisfactory results. Without being very exact in weighing or measuring the ingredients, he intends to mix one part of salt with two parts of gray rock plaster, and then adds about an equal bulk of wood ashes. The mass is then thoroughly mixed, and allowed to stand a few days before using. If applied alone, about 300 pounds are spread upon the land, whether cultivated or in grass; and, in case the land is planted, a little more is put in the hill. If other manure is to be used upon the same land the compost is worked into the manure and both used together. On land on which plaster has no perceptible effect when applied alone, this compost proves as beneficial as on land where plaster works favorably, in consequence, as he believes, of its combination with the ashes. Mr. M. prefers his home-made compost to any of the commercial manures. He is particular about the kind of plaster, and says the white has little, if any agricultural value.

SALT AS AN ANTI-RUST MANURE.

"A planter" writes to the *Macon Telegraph* as follows:

"I have used salt for *fifteen years* or more. I find it essential to success on all lands like mine, and most of the cotton lands are like mine. Three hundred pounds (six bushels) of salt and two hundred of land plaster to the acre are almost a total *preventive of rust*, which is one of the worst enemies to cotton the planter has to contend with. Salt makes cotton bear longer in the season and stand drouth better, it increases the quantity and improves the quality of the staple, it acts equally well on corn, oats and other grain, toughens wheat straw, and causes less waste from the heads of wheat breaking off when cut. I use eight hundred bushels, but many cannot use it on account of the price."

A SALT AND LIME MIXTURE.

A very useful and energetic mixture is made by the following simple process:

"Take three bushels of unslaked lime, dissolve a bushel of salt in as little water as will dissolve it, and slake the lime with it. If the lime will not take up all the brine at once—which it will if good and fresh burned—turn it over and let it lie a day and add a little more of the brine; and so continue to do till it is all taken up."

This mixture will supply plants with chlorine, lime and soda, all of which are essential; destroy the odor of putrefying animal matters, while it retains the ammonia, and promotes the decomposition of vegetable and animal matters in the soil or compost heap to which it may be applied. The farmer should keep a quantity of this mixture constantly on hand.

Brine which has been used for salting meat or fish, is still more valuable than that newly made, as it contains a portion of blood and other animal matter.

Whenever refuse nitrate of potash—that is, common saltpetre—or refuse liquid in which it has been dissolved for pickling meat, can be procured, it should be carefully preserved and mixed into a compost heap.

The Ramie Again—Views of a Planter.

The Ramie (*Bœhmeria tenacissima*) must, as a plant, never be confounded with the China grass, (*Bœhmeria nivea.*) The former is a more vigorous grower and produces a staple far superior to that of the China grass, for the following reasons: 1. It naps better with cotton, wool and silk than China grass. 2. It can be worked by itself better than China grass, being more supple, and softer and stronger. 3. It is the link in textiles between silk and Sea Island cotton, ranging in price higher than the latter.

Regarding its adaption to the cotton growing States, my experience has gone so far as to enable me to assure your readers of the following facts: 1. Our river and creek bottoms are the lands on which to cultivate it with greater profit than any plant we have now in cultivation. 2. The soil must contain a great deal of moisture, yet no standing water must be suffered on the ramie-field. 3. The composition of the soil does not make so much difference provided moisture is present. 4. On the heavy soils in Louisiana it produces such a rapid growth that four cuts of five feet height can by proper management be relied on. On sandy land, moderately rich, three cuts can be be made as far North as the cotton does well. Hill-sides I could not recommend, except they are very rich and have a moisture-retaining subsoil.

The ramie is a perennial, and once planted will continue to produce its crop for many years. It ought to be planted in rows four feet apart, and in the rows eighteen inches. The ground ought to be subsoiled to the depth of four-

teen inches, or deeper, before planting. The cultivation is very simple, and consists the first year in keeping out the weeds and stirring the soil with a cultivator after each cut. In the fall after the last cut of ramie is taken, a furrow ought to be thrown upon each side, as a sort of protection for the roots during the freezes of winter. The first work in spring, say February, ought to be the harrowing of the rows and the working of middles with a cultivator. After the second year weeds are not much trouble. Early planting will bring about a half crop the first year. The second year the stand will be very close in the rows, which is very important, because the slender, long stems have the finest and most silky fibre.

The market for this fibre is open. The first small lot sent this summer to England brought an order for twenty tons, with the statement that any amount could be used provided the manufacturers could be sure of the supply. What has kept the ramie back has been mainly the want of plants and their high price. This can easily be understood when we consider that in 1867 the first plants (about 3,000) were brought to New Orleans, and of this number only about one-third fell in the hands of spirited experimenters.

There has been a great deal of speculation and much exaggeration on the part of those who have had a few plants and wanted to make fortunes on them in one year. I sold mine at half the price at which they were sold in New Orleans by speculators; yet the people preferred to buy the plants there, and I had to supply the dealers. I could now supply over a million plants until next March, and am determined to put the price so low that they will be within the reach of all.

G. HENNZIKER.

Summit, Miss.

Culture of the Tropical Sugar-Cane.

A Florida sugar planter of intelligence and experience gives his method of culture in the *Ocala Banner*, as follows:

"If old land, break up very deep and thoroughly, then lay off six or seven feet, according to strength of land, the stronger the wider, then in your marks run furrow after furrow throwing out the soil, so as to have the trenches at least eight inches below the general level of the surface. This done, lay two canes side by side in the bottom of the trenches, then, with some sharp instrument, cut the canes' lengths of about three joints. This done, plow with a narrow bull-tongue plow, one furrow on each side of the cane, covering it all carefully about as deep and *no deeper* than corn is covered. Cane will not come up through much soil, hardly so much as corn will.

"The first act of cultivation should be to begin to plow near the centre of the space, between the cane furrows, lapping the dirt upon said centre and thus plowing with a turn-plow quite up to, and into, the furrow which covered the cane. This done, hoe off the cane row so as to destroy all the early weeds, following with a turn-plow, run one furrow on each side so as surely

to fill up the last furrow, before hoeing off, and thus protect the roots of the cane against drouth.

"This completes the first working of the planted cane. The second, third and fourth should be done entirely with an eye to suppressing the growth of grass and weeds, taking special care to 'lay by' about the first of July, with your cane now *no higher* than when you planted it. It *should* be a little below the level when laid by the first year. About the 15th of November all things should be ready for the grinding and boiling process. And as everything depends upon the proper cutting of the cane, for the preservation of the 'rattoon' crops, which in our climate should be preserved for six years, great care must be taken to have sharp knives, so as not to 'fray' the stubble, and with such cut not square off but *horizontally* to the ground, and down to the very ground itself. It is better to cut a little under ground than above it.

"To cut *horizontally* and level with the ground preserves thousands of roots, which if cut square off would catch the dews or rain, would ferment and so spoil the stand; if the stubble is left one or more joints above ground, it takes the frost when fermentation, and all its destructive effects follow. As fast as the cane is carted to the mill hands should be detailed to follow the carts, 'row by row,' and haul the tops and blades upon the stubble, so as to keep the row moist through the drouths of winter, and at the same time protect it against the contingency of frost which does sometimes, though rarely occur. Cane is an expensive crop to plant, therefore it is of primary importance to have as little of it to do year by year as possible, and, therefore, too much pains cannot be taken to preserve the rattoon crops, which my experience teaches me can be done profitably for six years from one proper planting and cutting.

"We will suppose that in January of the second year it is found that the rattoon is springing prettily through its covering of tops, etc., the first act of culture of the 'rattoon' is to rake out every other row, or every third row, according to quantity of trash, following with the plow and pulverizing it thoroughly and deeply up the cane row, so as to mulch it thoroughly and suppress, by shading, all noxious growths, and thus complete, for that year, the cultivation of that row. This plan not only returns all waste to the soil, but leaves the planter only one-half, or two-thirds of this valuable crop for after culture.

"The second, third or fourth workings of the second year and other years following must be done with an eye to thorough pulverization the first time, and afterwards simply with a view to keeping down grasses, etc., observing, year by year, as a *sine qua non* to the preservation of the rattoon crop, to cut low and to elevate your cane beds as *little* as possible. The method of culture will apply as well to new ground Hammocks, with only the difference of different plows, on account of roots, till they give way, which soon do in our lime soils, and saturated as they are by our tropical summer rains. I am satisfied from experience and observation that there are many thousands of acres of Hammock land, in the Ocala Hammock and other Hammocks in Marion County, for the most part high, dry, undulating lands, which under such culture and care as has been indicated, will make 2,000 pounds of sugar per acre per annum, six or more years from one planting and then in consequence of their lime, marl and phosphate foundations, are in good heart for another term of most profitable cane growing.

"We hold that from twelve to fifteen bushels of corn can be made to each acre of cane without detriment to the cane itself. Supposing this to be true, let us calculate a little the profits of cane culture in this country. One acre

of cane will make 2,000 pounds of sugar, eighty gallons of molasses and twelve bushels of corn. The sugar at 10 cents is $200, the molasses at 50 cents is $40, the corn at $1 is $12, making altogether $252 to one acre. Now, *one* hand can readily cultivate six acres of cane and corn and four acres of corn separately, which will make on an average twenty-five bushels per acre. From the cane he will get 12,000 pounds of sugar, worth $1,200, from the corn in his cane he will get 75 bushels worth $52, from his four acres of outside corn he will get 100 bushels worth $100, from his 80 gallons of molasses he will get $40, making, in the aggregate, $1,320.

"Now these results seem incredible, but, nevertheless, we believe they can be realized. Now we do not claim that one hand, or any number of hands aggregated, can take off and manufacture six acres per hand, but in these piping times of idleness any amount of help can be had during the manufacturing season."

The Peeler Cotton and the Sulky Plow.

PEELER VS. DICKSON.

Mr. Editor: One of my experiments this year was with the Peeler cotton. I bought one bushel seed from Mr. G. W. Williams, Charleston. I planted it in April on an acre and a quarter of good land, by the side of Dickson's improved seed, bought of David Dickson, of Sparta. The land for both seeds had been prepared, as nearly as I could, after the Dicksonian mode, except that my ridges were probably thrown up a little higher. The soluble Pacific manure was used alike on both kinds.

The Dickson cotton matured about one week earlier, and until the harvest was closed I and every one who saw it supposed that it yielded about three times as much as the Peeler. The seed of the Peeler is very large; those of the first pickings being twice the size of the common short cotton seed, is covered with a short, woolly, brownish lint near the seed, which is so adhesive that the saw-gin can't well clean it, and it is the most tedious cotton to saw-gin I ever tried. The seed is lighter than any other seed I know, and on scraping off the wool from the seed with a knife I find a small black seed. Mr. Peeler says he found a few years ago a single stalk in his field, but how did it get there? I am inclined to think it will turn out to be the Egyptian Mako cotton. The lint of this cotton is heavy in proportion as the seed is light, and the seed is better covered with lint than any other cotton I have ever seen. After it is ginned the lint is of a fine, rich, cream color, but before it is ginned presents a *white*, glossy appearance, so much so that it could be easily distinguished from short cotton thirty feet off. This was strikingly proved by over a dozen persons. A negro tenant had stolen near 300 lbs. and hid it with and under his short cotton, and claimed it as his first picking, but it could as easily be distinguished by its gloss, length of staple, and silky feel as any long cotton could be from short. I send you a sample of seed cotton

and saw-ginned lint. The yield of lint was about 336 lbs. per acre, while the adjoining land in Dickson's improved was about 2,100 lbs. seed cotton per acre. The Peeler yielded half, perhaps a little more than half, as much ginned cotton as the Dickson, and I don't hesitate to say that I believe it would make a little more per acre than any Petit Gulf seed that I have ever planted. There is one peculiarity about it which I will mention. Of all other cottons I have ever planted, the latter and post-frost pickings have a weaker but softer and more silky-feeling lint. The Peeler, on the contrary, becomes rougher, coarser, and with a shorter staple than the first and earlier pickings. The Peeler is most easily picked, but of course falls out of the bur all the sooner, and a large crop could not well be saved in a bad harvest season. It is said, when saw-ginned, to be worth ten or twelve cents more than short cotton, and if roller-ginned (is it practicable?) would probably be worth three times as much. I have formerly planted long cotton, King, Wilson and Fripp and Owens seeds. The product is comparatively very small. The Peeler, it seems to me, will eventually supersede all other long cotton on our Sea Islands. I expect to plant every seed I've made on my Broad River plantation if I find it practicable to have it roller-ginned.

THE SULKY PLOW.

I have never seen or used a Sulky Plow, but an enterprising gentleman from New York, who bought a plantation near the Eutaw, Capt. H. W. S., in reply to my inquiries, wrote me on the 8th ultimo. I extract from his letter:

"You ask if my cultivator (Sulky Plow) was a success. I answer unqualifiedly in the affirmative. Hear the facts, and judge. I cultivated with it alone 100 acres of corn, employing but two horses and one man, without hoes, until the last bedding. The corn cultivated in this way, yielded more and withstood drouth better than that worked in the old way. Besides, it is a saving of more than half in working. I find the best mode of preparation for it is a thorough breaking up of the soil, in winter, manuring at same time. When the season opens, checker the field with a small plow, lines four feet apart each way, and plant in checks. As soon as the corn is well up, commence with cultivator, set shallow, running through first one way, and immediately returning and crossing it. This method effectually keeps down grass and weeds, pulverizes the soil, and the plants, if they have any vitality in them, are bound to grow. In fact, it gives them vitality. I leave two stalks in each hill and *it does not suffer from drouth. The cost of four workings with the cultivator will not exceed $3 per acre.* I firmly believe that short cotton can be cultivated in the same manner, during the early part of the season. Anyway, I mean to try it next year."

I had months ago intended to see this plow in operation, and in case I could attach to it and work the Dicksonian Sweeps, to purchase several for next year. I hope to see it shortly. There can be no doubt it will prove a great labor-saving implement, and in the hands of practical planters, like Mr. Dickson, will yet do wonders for us. SUBSCRIBER.

Grahamville, S. C.

The Morals of Cotton.

To the Editor of the Rural Carolinian.

Dear Sir: I send you some verses from my portfolio, which may fitly reach the public eye through the medium of an agricultural journal. The subject of Cotton is one which men are not apt to associate with ideas of poetry or even sentiment. We confine its recognition almost wholly to commerce and manufactures; and, in so doing, we narrow the sphere of our mental vision to the very loss of faculty. What sight, for example, is more beautiful to the eye of taste than a grand prairie tract, covered with cotton, in full *blow?* What history more interesting to humanity than that of the once obscure weed, from which human art now draws resources, which, in clothing millions, feeds as many more? An ingenious and imaginative writer, taking a single cotton seed in his hands, and pursuing its culture, the working, picking, ginning, packing, vecture or carriage, its subsequent manufacture, till it passes from the loom into the apparel of a Beauty, or grows into a sheet of rosy paper for Beauty's *billet doux*, might work the whole history into a beautiful romance, or into a series of sketches, such as Dickens manufactures for his "Household Words," in which the utilitarian and the romantic are exquisitely blended; which instruct labor and industry, and present pictures that delight the taste and fancy. If my verses on this humble but fruitful subject should serve to inspire some more able artist to attempt a more elaborate illustration of the history, I shall be well satisfied.

Your obedient servant,

W. GILMORE SIMMS.

Woodlands, S. C.

THE MORALS OF THE COTTON PLANT.

I was a paltry seed, a worthless weed,
In my own land, to scarce a use decreed:
Though rich in growth, neglected and despised,
No culture foster'd, and no people prized.
The stranger came;—he bore me to his home,
A thousand leagues across the salt sea foam;
There housed me deeply in the warm, dark soil,
And call'd the savage to his proper toil;
With sov'reign art enforced the law which said,
"By thine own labor shalt thou earn thy bread"—
Till he, like me, by art and order driven,
Grew blest, fulfilling the decree of Heaven!

He, the poor savage, late so foul and base,
In the just training of the nobler race,
Matured to manhood, with developed powers,
That crowns the world with wealth, the waste with flowers,
Lost all ferocity, and soon became,
For toil an expert, for religion tame;
No more the savage, only doomed to strife,
But saved and lifted to superior life;
Glad in his progeny, of great increase,
And ever sure of fostering care and peace!

Grateful, I flourished 'neath the guardian care,
That brought me needful light and generous air;
That watch'd my growth, protected me from weed,
Broke the unwilling clod that bound the seed;
Foster'd with food, as nurture; nor forebore,
Till he and I, at last, could do no more;
But yield to HIM, the Lord of All, who brings
Increase and peace to seasons, men and things!

I bourgeon'd glad, with branches widely spread,
And flaunting blossoms, orange, white and red;
Then heavy hung with fruits—great bolls of green,
That, bursting, showed the precious wealth between;—
Soft curls of silk, laid open to the sight,
Reveal'd my virgin treasures, pure and white;
Great fields of glossy green, all starr'd with eyes,
Thick as the Heavenly Host, in autumn skies!
These, by the guardian genius, gathered well,
And pass'd through engine, as by wizard spell,
Were stript of weed and seed, of mote and stain,
And sped to thousand realms beyond the main.

By other arts employ'd—through other hands—
I pass'd, and clothed in beauty thousand lands;
Gay tissues, whitest lawns, and loveliest fleece,
Gave Toil employment, and the nations peace;
Art schooling labor with superior lore,
Crown'd the whole world with wealth unknown before;
Realms gladly struggled for my virgin charms,
And Beauty fondly clasp'd me to her arms!

Thus were the nations gladden'd, and they came,
To hail with blessing, that which once was shame!
The little lowly seed, the worthless weed!
Won thanks for blessing; honor for its meed!
I kept the Peace of nations, I subdued
The ire of War and soften'd anger's mood;
Fill'd the world's eye from Europe to Cathay,
And grew from human need to human sway!
Till men forgot each lesson that I taught,
Madly with fortune and with kindred fought;
Laid bare my fields, deflowered them, spoiled my fruit,
And tramp'd my verdure down with iron foot;
Nor found their emblems best, of purity,
Love, Meekness, and Humanity, in ME!

VALUE OF ASHES.—Many persons in the country, who cultivate more or less land, have been in the habit of selling ashes at a very small price. Farmers and gardeners had better collect all the wood ashes they can, until they cost them over twenty-five cents a bushel. Coal ashes are also valuable, though less so than wood ashes.

THE CRANBERRY CROP.—The cranberry crop of New Jersey promises a large yield—greater than any previous season. In Ocean County there are two thousand acres of cranberry fields, which are valued at $2,500,000. An acre of cranberry land, three years old, is worth from $1,000 to $2,000.

ADVICE TO FARMERS' DAUGHTERS.—Girls, don't look toward the city with longing eyes; if you would preserve the roses fresh in your cheeks, stay in the country air and sunlight.

A CORRESPONDENT of an exchange advises American farmers to adopt the rule of many English farmers—that is, never to allow two white straw crops, such as wheat, oats, barley and rye to follow each other.

Department of Horticulture and Rural Art.

Letter to a Northern Inquirer.

Dear Sir: I am glad to learn that you have cast your lot with us, and are preparing to test the capabilities of our Southern soil and the advantages of our fine climate. With energy, industry, and a wise adaptation of your modes of culture to the new conditions under which you will labor, I have no doubt you will meet with success. I will, with pleasure, so far as I can, aid you in making a right beginning, but you will after all be compelled to learn much in the expensive school of experience.

Your questions are too numerous and involve too many important considerations to be properly answered in a single letter. I will reply to a few of them here, reserving others for a future communication. To save space I shall refer to your queries by number instead of reproducing them. Their import will be obvious from the character of the replies:

1. Soils of the South.—Every kind of soil described in agricultural books may be found in the South, but the predominant element in those most widely prevalent in the seaboard States is sand, and it is on these sandy soils that the peculiar conditions under which agricultural and horticultural operations are carried on there are most strikingly manifested.

These sandy soils impress the Northern or Western farmer very unfavorably at first sight, and he is very apt to return from a winter visit to the South with a very erroneous idea of its agricultural capabilities. He does not give the pine lands of the Carolinas, Georgia and Florida, the credit that is really due them. The results of the ruinous system of cultivation which has been in vogue in the South since its first settlement, as seen in the worn-out "old fields" which meet the eye on every hand, help to confirm him in his unfavorable opinion; but the poorest of these lands, in such a climate as that of Georgia or South Carolina, (to say nothing of Florida, where it is still more favorable,) can be made, under a judicious system of cultivation, to produce a better return for the labor bestowed upon them than the farmer of New England or New York is accustomed to get from his stronger but harder and colder soils. The Northern immigrant will, perhaps, be among the first to demonstrate this, and show his Southern-born neighbors that they have never half appreciated the value of their own soil and climate.

2. Our Seasons.—Winter in the seaboard Cotton States is more like a perpetual Indian Summer than anything else to which I can compare it. The days are delightfully soft and balmy, but the nights are quite cool, and the mornings occasionally sharp with frost. This is the season for doing the heaviest work of the farm—the clearing, fencing and breaking up. February, though nominally a winter month, really ushers in the spring and opens the planting sea-

son. Spring is also emphatically the season of growth at the South, and the wise farmer or gardener makes the most of it. He mistakes who thinks that because he has the whole of the summer and fall before him, as well as the spring, in a climate where frosts come only with the approach of winter, he may delay the planting of his crops almost indefinitely. It is necessary here, as well as further North, to take advantage of the early spring.

With the summer we have reason, in most parts of the South, to expect a season of drouth, more or less severe. This is one of the greatest drawbacks of the climate, and is the thing to be particularly provided for in our arrangements—in the times and modes of planting, as well as in the kinds of crops to be grown. If we plant as early as the season will permit, we are far less liable to suffer from the drouth than if we delay. We may get a good crop of corn by planting as late as June, but our chances of an abundant harvest are much greater if we plant in February or March. In Florida, however, instead of a drouth, we have the rainy season of the tropics, commencing in July and lasting till September.

The autumn is like another spring to the Southern gardener. He spades up the ground, applies plenty of good, well-rotted manure, and begins his planting anew. Turnips, cabbages, radishes, lettuce, peas, beans, mustard, rape, kale and spinach are again in order, and, with the exception of the peas and beans, will flourish finely all winter. Fall and winter-grown turnips are exceedingly fine in the South, and heavy crops can be made on suitable and properly manured land.

3. Garden Crops.—The months of March, April and May supply our tables with an abundance of the good things of the kitchen-garden—radishes, lettuce, turnips, cabbages, asparagus, green peas, string-beans, Irish potatoes, green corn, strawberries, etc., and in Florida, with watermelons, cucumbers, squashes and tomatoes in addition. June generally brings hot, dry weather. Watering liberally and mulching enables us to keep our gardens in a tolerable condition for a few weeks longer; but they gradually fail. Our radishes become tough and too highly flavored, and our turnips stringy and bitter. The later cabbages fail to develop any heads, and their lower leaves turn yellow and fall off. Late peas fail altogether, and late beans (except the Lima and Sewee) partially. Irish potatoes, unless well mulched, as they always should be here, generally rot in the ground if not dug before the hot weather comes on. Tomatoes grow and bear finely in the early part of the season, commencing to ripen in middle Carolina or Georgia from the 10th to the 25th of June, (earlier, of course, further South;) but as the heat and drouth increase, they begin to fail, especially on dry, sandy soils, turning yellow, and generally dying outright; or if the plants continue to live and produce fruit, the latter often rot before getting ripe, becoming white and soft, as if actually cooked on the stalk by the heat of the sun. The new settler from the North, who was so proud of his garden in April, looks at it in July with dismay and discouragement; but his Southern neighbors take this condition of things as a matter of course. He expects nothing from his garden during the summer,

except, perhaps, a few "collards." How these climatic difficulties may be overcome, partially at least, and a good summer garden made possible, I shall endeavor to show in due time in The Rural Carolinian. In the meantime I give you the general experience of Southern gardeners.

4. Making a Garden.—To tell you how to make a garden in this climate, (or in any climate,) would require more time and space than I have now at command. As important points, I would say that depth of soil is even more important than in cooler and moister climates, as it encourages the roots to penetrate deeply, and thus become better able to resist the effects of heat and drouth. It is also more important here than at the North that all animal manures be well rotted. Heating applications are not needed, except for an early seed-bed, or to forward a winter crop of radishes or lettuce. Use well-prepared composts, in which swamp-muck will be found an excellent ingredient. Burnt clay, liberally applied, benefits a sandy garden very much, and manuring and spading should be liberally and thoroughly done.

What Time to Plant.—For directions in regard to the proper time to plant the different farm and garden crops, see "Work for the Month," in each number of The Rural Carolinian. I shall also, from time to time, give my views in regard to the best varieties of fruits and vegetables for cultivation in this climate. The remaining questions contained in your interesting letter I reserve for another occasion.

Very respectfully, yours,

D. H. JACQUES.

A few Notes on Grape Culture.

In the South fruit culture, more particularly the cultivation of the grape, has been sadly neglected, of a necessity the last few years, owing to very unpropitious causes which are and would be calculated to unsettle the minds of all classes, more particularly those of the farming population. Some very creditable beginnings have been made, and many enterprises successfully carried through, owing to the energy of the Southerners, but when thorough *practical* information shall have been diffused through the length and breadth of "our glorious South," through the medium of the very many valuable journals which are rapidly springing up, then and only then will the land produce as it ought, and with proper treatment, the planters will realize their just gains, and make by their own praiseworthy exertions "the South blossom as the rose." Select the place designed for the plantation in the fall before the heavy frosts, or in early spring before the buds begin to start, have it plowed and made fine, draw furrows the length of the field ten feet apart, (some planters put the vines eight by ten feet, some ten by ten, some ten by twelve, six by six feet, and so on according to the fancy of the planter, but bear in mind that those which are put too close *may* do for a few years, but

will not do so well subsequently, ten by ten feet is a good distance, one which we have adopted,) with a two-horse plow draw other furrows across the first ten feet, now dig holes two feet in diameter, one foot or eighteen inches deep, where the furrows cross put three or four inches of bones, leaves, chips of leather, or, in fact, anything which will decay slowly, and fertilize the vine gradually, and cover with about two inches of good dirt, mounding it up slightly in the middle, take the vines and set them in the holes, spreading the roots, proceed to fill up around the vine, pressing the ground down firmly with the foot. Now drive in the stake or pole (about seven feet high and three inches across the butt) by the side of the vine, or put it in before the vine is planted. As the vines commence to grow, keep trained nicely to the stakes. Cut off all the suckers that spring up, leaving only one stalk to grow the first year. In the fall trim down to two eyes, and in the spring grow two canes, treating them as before directed, and in the autumn put up a number ten wire trellis, the posts to be six or eight inches across, of cedar or chestnut, and planted two and a half feet in the ground, leaving six or seven feet above, put on from three to five wires, and train them as shown in Figure 1.

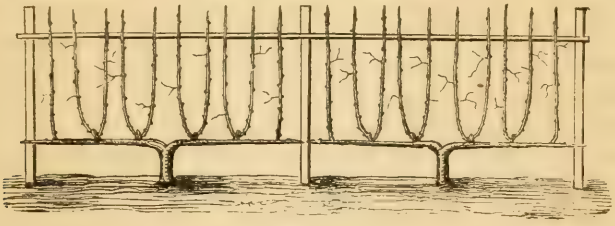


Fig. 1.

Fig. 2.

The first year on the trellis, after the leaves have fallen off, cut as indicated in Fig. 2, and grow two shoots on the main arms (Fig. 1) in the place of the one; next year grow one; next year two and so on to the end of the chapter, keeping the arms intact.

To cultivate the vineyard make but little use of the plow, using the cultivator or hoe in preference, on account of injuring the fine roots which lay near the surface by plowing deep, thereby materially injuring the vines, and considerably lessening their productiveness.

Never prune when the sap is in motion, or bleeding will ensue, which will either fatally impair the vitality of the vines, or result in their immediate death.

If it is desired to utilize the trimmings or cuttings, have them taken to the house or some convenient place, and employ the long evenings in cutting them up into "cuttings" of two eyes each, the bottom cut close to the bud, and

the upper one half or one inch above the upper eye, pack in bundles of 100, with the upper and lower parts in proper place, and put in a cool but not too dry a place until wanted in the spring, when some light ground should be chosen, made in fit order to receive the cuttings, two light one-horse furrows thrown together, making a ridge, and put about one or two inches apart, the longest end uppermost, and the upper eye just covered with soil, so that when the ground settles they will be in their proper place; keep clean and well cultivated in the summer, and in the following fall the vines will be fit to set out in the open ground.

DAVID Z. EVANS, JR.

Chesapeake City, Md.

The Banana and the Papaw.

Next to the orange in importance as an object of cultivation in the semi-tropical climate of Florida, we are inclined to rank the banana, some varieties of which can be successfully grown as far north as Fernandina on Amelia Island. The best kind for cultivation north of 28° north latitude is the Dwarf or Cavendish banana, (*Musa Paradisiaca Cavendishii,*) it being the most hardy and not requiring so long a season to mature. It seldom attains a height of more than eight or ten feet, while the tenderer varieties often reach twenty feet or more in height.

A writer in the *Planter and Farmer* recommends planting bananas between the rows of orange trees, setting the plants from eight to ten feet apart, so as to make two rows of bananas between every two rows of oranges. It will come into bearing in two years, and as it is well supplied with suckers, it keeps up a succession of bearing plants to supply the places of those which, having brought their fruit to maturity, cease to bear, and are taken off to give place to the young shoots which are coming on. Each stem which bears fruit will give about one to succeed it, and three for transplanting. If the ground is made very rich it will do more. It grows well on ordinary light pine land enriched with leaves, or rotten wood, or dead grass. The rushes growing so abundantly along the beach and margins of our ponds, is found to answer the purpose admirably. By this method, while your orange trees are coming slowly and steadily into bearing condition, you have another crop on the same ground, which in two years bring you a crop perhaps equally or nearly equally as valuable.

This plan may work very well, but as a banana plantation once made need never be renewed and as the plant must necessarily rapidly exhaust any ordinary soil, we should prefer to plant in a separate field, setting the plants ten feet apart for the dwarf kinds and from fifteen to twenty for the larger growing sorts. The soil should be strong and well prepared, and the plants kept well manured.

When a plant is fruiting and all the flowers are set, it is well to cut off the spadix (or flower stem) an inch or two above the last tier of perfectly formed fruit in order to hasten the ripening. Each plant produces one and only one bunch of fruit, when it is cut down to make room for succeeding plants. It is stated, on good authority, that one acre planted with the banana will produce as much food as forty-five acres of potatoes; and a most delicious food it is, either cooked or raw.

The banana is grown as an ornamental plant as far north as Charleston, but seldom produces fruit. In one case at least, however, we are told, a plant fruit was produced and ripened fruit here in the open air.

The name papaw is applied in this country to two widely different fruits, both of which, however, are delicious and worthy of extensive cultivation.

The true papaw (*Carica papaya*) is a native of South America, but is grown with perfect success in Florida south of 30° north latitude, thriving and bearing profusely at St. Augustine. It is a tree growing twenty feet in height, and bearing in three years from the seed. The fruit is pear-shaped, and from two to four inches in diameter, and has the flavor of a muskmellon, though sweeter.

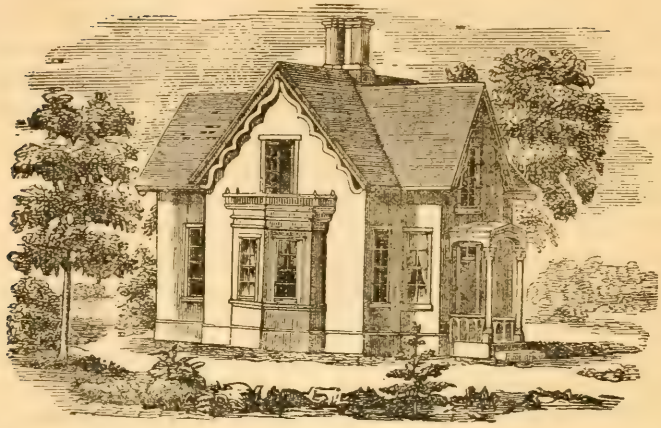
The fruit more generally known as the papaw or custard apple, is the *Asimina*, of which there are many species, one at least of which (the *triloba*) is found as far north as Ohio. We have found three or four species growing wild in Florida. Nearly all the species bear edible fruit. Among the best are the Cherimoyer (*A. cherimolia*) and the Alligator apple, (*A. palustris,*) both of which can be grown in the latitude of St. Augustine, and are easily propagated from seed. The common American papaw (*A. triloba*) should be planted where the other species are not found hardy. To our taste, the fruit is superior to the banana in flavor. It succeeds best in rich moist soil. Its pulp is so extremely rich and custard-like, that some persons who like its flavor eat too freely of it at first, causing nausea and a dislike to it afterwards. That it may be improved by cultivation there is not a doubt.

We desire to obtain seeds of all edible species of *Asimina* for distribution, and particularly of the *A. triloba* or common American papaw.

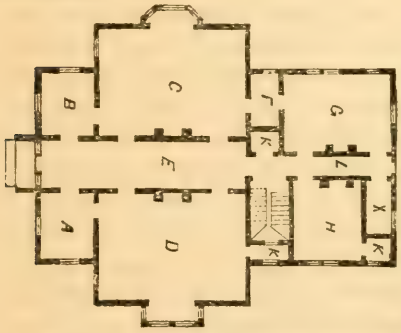
The Benefits of Mulching.—If a mulching is employed at the time of planting trees, they will never need watering. Uniform temperature and a constant supply of moisture are the prime elements of success in fruit culture. Mulching enables us to accomplish this. Mulching acts beneficially in other ways. It prevents to a great degree the cracking of fruit, and causes those varieties which are generally spotted and defaced to become clean and covered with a rich bloom.

Save Seeds.—The best specimens of tomatoes, egg-plant, melons, and, in fact, every kind of fruit and vegetable, should be laid aside for their seeds, and when they are taken out let them be put in boxes or bags and properly labelled. If every one would try to obtain improved varieties by careful selections only, we should hear of less complaint about the deterioration of fruits and vegetables.

A Convenient Cottage.



This house was designed for the latitude of Kentucky, but needs only slight modification to adapt it to a more Southern locality. A veranda running around the front projection should replace the porch, which does not ensure sufficient shade for our climate. The plans show an admirable arrangement of rooms.



A—Reception room, 9.0x11.6.
B—Conservatory. 9,0x11.6.
C—Dining room, 18.0x25.0.
D—Parlor, 18.0x25.0.
E—Hall, 8.6 wide.
F—Pantry, 5.0x9.0.
G—Kitchen, 13.6x18.0.
H—Breakfast Room, 11.0x13.0.
X—Store room, 4.6x9.6.
K—Closets, 4.6 wide.
L—Back hall.

The two rooms marked A and B in the first floor plan, which communicate so conveniently both with the hall and with the adjoining rooms, form a peculiar feature in this plan. In a village or suburban dwelling they may be made to minister to use as well as to beauty, whether their office may be such as we have indicated or not. The broad and unobstructed front hall, running quite through the main building, is expressive of breathing space, fresh air, and summer comfort, and forms a commodious antechamber to the rooms on each side. The kitchen (G) communicates with the dining room (C) through the pantry (F) as well as by way of the back hall. The room marked A may be used for a bedroom, if not required for the purpose we have indicated.

The second floor admits of the same general arrangement, with sleeping apartments, dressing rooms, closets, etc., in place of the rooms naturally required below.

Planting Irish Potatoes.

Portions of our upper country—the northern counties of South Carolina and Georgia and Western North Carolina and East Tennessee for instance—are admirably adapted to the profitable cultivation of the Irish potato. On the Sea Islands and in the coast region also we have in some localities suitable soils for their growth, but our prevailing sandy lands and hot, dry climate cannot be considered naturally best fitted for this crop. It requires moisture and coolness. To succeed, therefore, on light, sandy soils we must seek artificially to produce these conditions to such an extent as is practicable. We should first dig into the soil, (which should already be rich from previous manuring,) a large quantity of vegetable matter—swamp-muck, soil from the woods, decayed leaves and garden refuse; then—an important point—give it a good dressing of wood-ashes, and finally plant early, so as to give the crop the advantage of the most favorable part of the season to mature. In our modes of planting and cultivation, we should also have the same principle in view.

Plant (in January or February) in deep furrows or trenches about three feet apart, first scattering into them some half-rotted straw or other litter from the stable lot or elsewhere. Place the sets about eight inches apart in the trenches, and scatter some well-rotted stable manure over them. A slight dressing is best if the ground be already rich. Too much animal manure injures the quality of the tubers, though, under favorable circumstances, it may increase the quantity. Your trenches should be so deep that when the sets are sufficiently covered, the surface will be below the general level, that the plants may get the full benefit of all the rain that may fall near them. After the plants come up, hoe them well, and when there is no longer any danger of frost, mulch the whole patch heavily with "pine straw," leaves or some other suitable material, to keep the roots cool and retain the moisture. Directly after a rain is the best time to apply the mulch. We wait till the frosts are over, because the evaporation from the damp mulch lowers the temperature so much as to render the plants more liable to be cut down. If the mulch cannot be obtained, keep the ground free from weeds by shallow level culture till the vines cover the ground. Dig as you require the tubers for use; but if the ground be not mulched, your crop will totally disappear—especially if planted in sandy soil—as soon as summer comes on, all rotting in the ground. The choice of varieties is a very important matter here—much more so than at the North—many kinds proving utterly worthless with us. The Mercer and Western Red have been favorites, but are being discarded in favor of newer sorts, among which Jackson White, Early Goodrich and Early Rose may be mentioned as well tested and shown to be adapted to our climate.

The difficulty of keeping our early crop through the summer renders it necessary for us to procure seed potatoes from a cooler climate, and they are

usually bought at the North, and sometimes at a very high price. Our mountain region should furnish them in abundance at a lower rate, and with no liability to get frozen on their way. Up-country potato-growers, please take notice, and if you have seed potatoes to sell, advertise them.

Cedar Grape Trellises.

The durability of cedar, independently of any other consideration, renders it one of the best species of wood for the posts of a grape trellis. It is believed that it possesses other properties which render it still more desirable. It has been observed, in several recorded instances, that vines trained on cedar posts were less affected by either insects or by mildew than those standing near them and trained on other wood. The coincidence noted may have been accidental, but the result is what we might reasonably expect from the aroma of the wood, which is known to be anti-septic and obnoxious to insects.

Be the fact as it may, in rgeard to mildew, cedar is excellent for grape trellises, and where the wood is abundant, can be made to serve the purpose of both posts and horizontal strips, as shown in the accompanying engraving. We should cut the trees from nine to ten feet in length, trim them as shown in the wood-cut, and set them from two and a half to three feet in the ground, bending and interweaving the longest branches as might be necessary. On such a trellis the vine will need little if any tying.

Nutmegs.

The Indian Archipelago is the country of the nutmeg. It grows on trees, which commence to bear at the age of seven years and continue to bear for many years, like our apple. From flowering to the ripening of the fruit is about seven months. The average product of a tree in full bearing is five pounds of nutmegs and one and a quarter pounds of mace. The harvest is from September to December, but a small harvest is made in May and June. The mace is an imperfect covering for the nutmeg, (not the husk.) The mace is flattened by the hands and laid on mats to dry in the sun. Afterward it is dried by coal fires and packed for exportation. The nutmegs are more difficult to dry. They are dried by fire alone for several months, like smoking meat, although without much smoke. When thoroughly dried they are packed in tight casks, lined and smoked,

A Talk About Porches.

The author of "My Farm of Edgewood," (Donald G. Mitchell,) has written some very pleasant paragraphs about porches, a few of which we here reproduce with his original illustrations:

"If simple material is to be dealt with, it should be dealt with simply. If we have a homely old-style house to modify and render attractive, do not let us make its modification a mockery by the blazon of Chinese scroll-work. There is a way of dealing with what is old, in keeping with what is old, and of dealing with what is homely, in keeping with what is homely.

"I do not know that I would absolutely advise the building of those ancient divided doors with their diamond 'lights;' but wherever they show their quaint faces, looking out tranquilly upon the clash and turmoil of our latter half of the century, I would certainly cherish them; or if I hung a porch over them, it would be such a one as should be in keeping with their quaintness, and yet offer all promise—which a sensible porch should offer—of shelter and rest. I am sure the houses would take on a double homeliness, and I should think of all the inmates as growing thenceforth, every day, more kindly, and every day mellower in their charities.

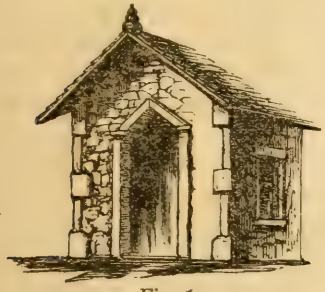


Fig. 1.

"Fig. 1 is a little stone porch which, if I do not mistake, is taken from some stone cottage in Cumberland County, England. It belongs, certainly, by its whole air and by its arrangement, to a country where stones of good, straight splitting quality (such as gneiss) are plentiful, and are used for unpretending cottage architecture. It would seem to have pertained to a house of very modest character, and to one whose position and exposure demanded special shelter. I think it may offer a hint, at least, of the proper use of similar material in our country.

Fig. 2.

"Fig. 2 is a rustic porch, pertaining some fifteen years since to the house of a village curate. There were vines clambering over it, which I have omitted, in order to give full idea of the simplicity of its construction. I know it is the way of the grand architects to sneer at all rustic work as child's play; but I cannot see the pertinence of their sneers; it is quite true that rustic work will not last forever—neither will we; householders and architects, and all the rest of us, have the worms gnawing at our vitals, and the bark falling away, and the end coming swift. But a good, staunch tree trunk, cut in its best season, (late autumn,) is a very tolerable sort of God's work, and, seems to me, can be put to very picturesque uses. I don't think the curate's porch is a bad one; as a hint for better ones, I think it is specially good."

New Mode of Grafting the Vine.

The uncertainty and inconvenience of the customary mode of cleft-grafting the grape vine are known to all who have practiced it, and the only course of practice that has been discovered tending to increase certainty is that which consists in cutting the stock close over the ground, and covering the work with earth.

M. Auguste Boisselot, arboriculteur of Nantes, has sought a remedy for these inconveniences, and after many years of experiment has attained complete success.

Here is the method: He cleaves the stock between two bifurcations. It is no matter at what height of the stock this is done. Into the cleft he introduces the graft, cut as for ordinary cleft-grafting. It is then bound up with a strong ligature and grafting wax. He next binds the two branches of the bifurcation at two or three eyes above the cleft; and in the spring, as the sap rises, he pinches back the young shoots, causing thereby a flow of sap into the graft. He does not cut off the two stumps of the stock until the autumn following the insertion, by which time the graft is well developed.

The experiences of M. Boisselot have sufficiently demonstrated that this mode of grafting is nearly infallible. It offers the utmost advantages to the cultivator, especially as a graft can be inserted wherever there is a bifurcation, hence affording the power to place a number of grafts on the same stock. The sudden suppression by means of the knife of the whole of the vine above ground is always prejudicial to the root action, and the "Greffe Boisselot" is free from this objection. Another important advantage attending it is, that if the graft does not prosper, nothing is lost, for the branches of the bifurcation will produce their fruit the same, and the stock will not suffer more than from the check to which it is subjected by the ordinary process of cutting down.

The horticultural journals of France have given publicity to this invention, and rendered justice to its inventor. The Imperial and Central Society of Horticulture of France has been occupied at several of its meetings in the consideration of the subject, and M. Ducharte, the Secretary-General, testified, at one of its recent meetings, that he had practiced this new mode of grafting with success.

The "Greffe Boisselot" may be practiced at every season of the year, but its inventor recommends—and with reason—that the autumn should be preferred, the best time of all being when the leaves of the vine begin to turn yellow.

We consider this invention as of immense service rendered to the culture of the vine. A diagram explanatory of the process is subjoined. It represents a graft made on the 6th of October, 1864, and which commenced to grow in June, 1865.

JEAN SISLEY,

In Gardener's Magazine.

The Hicks' Apple.

This is an early sweet apple, much esteemed at the North, especially on Long Island, where it originated. It is an early and abundant bearer and good grower, and the fruit is large, handsome and of excellent quality.

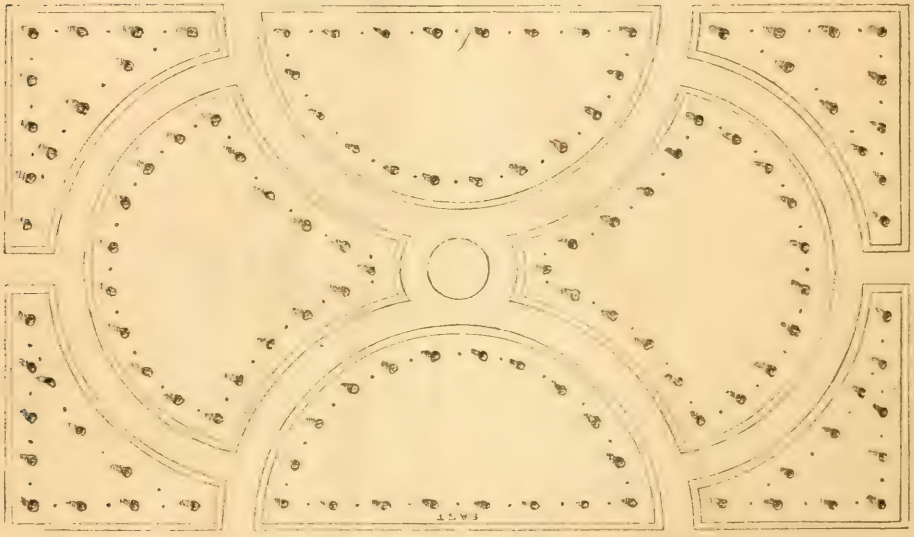
Orange Culture.

Orange-growing is undoubtedly to be one of the leading enterprises in reconstructed Florida. No crop in that State is surer or more remunerative. It requires only a moderate capital to establish a grove of four thousand trees. The wild orange grows everywhere in the State, and is easily transplanted and grafted with the sweet variety. The cost of transplanting and budding is estimated at one dollar per tree; one hundred trees may be set on an acre, and good trees will produce from fifteen hundred to twenty-five hundred oranges. The fruit does not all mature at once, the same tree showing blossoms and green and ripe fruit at the same time, and the fruit season covers the period from October to May.

Oranges have sold on the plantations during the past year for from two to three cents each, the buyer picking the fruit. Twenty-five hundred dollars

have been realized in one season from a single acre on the St. John's River. This is for the mature crop, after the growth of seven years from the time of budding, for, after the third year, the crop nearly doubles every year. There is no finer fruit than the Florida orange in perfection. The Cuban oranges are not their equal. Dr. J. C. Kenworth says that he has tasted oranges from every orange-producing country in the world, and that for thinness of skin, amount of juice and richness of flavor, he has never seen any that equalled those grown on the banks of the St. John's. The last season is reported to be the best for ten years past.

Another Garden Plan.

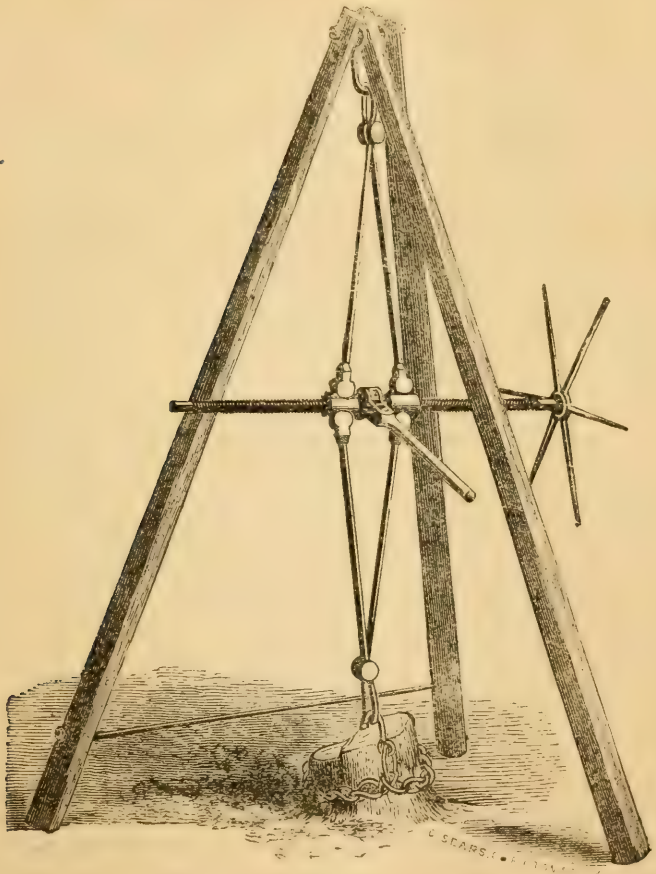


As this is the season for laying out gardens, we submit another plan. This one contemplates fruit as the principal crop, though vegetables may occupy portions of the space. Fruit trees (dwarf or standard, according to the size of the grounds and the objects of the proprietor) may be planted around all the beds, and strawberries, raspberries and other small fruits and vegetables in the spaces left blank in the drawing. In the centre is space for a rustic tool house or other convenient or ornamental structure.

The Workshop.—Never suffer yourself to be unprovided with suitable work for yourself and hands on a rainy day. A commodious workshop is necessary on such days, and a plenty of good tools. In such cases a good farmer will never lack for work. Much money may thus be saved that otherwise would go to the wheelwright.

Department of Mining and the Mechanic Arts.

The Jacques Stump Extractor.



The above cut represents a new invention (*patent applied for*) which I have called "The Jacques Stump Extractor," and is easily understood. The greatest power is obtained just at the time when wanted—when the operation commences. The centre end of levers or "toggle joints" are connected with nuts, and are operated upon by a screw, right and left, cut from the ends to the centre. The screw is operated upon and turned by a powerful rachet and pawls, which is secured to the centre of the screw, and by simply raising and bringing down the lever connected with the rachet wheel, the screw is turned and the levers in the centre open, which draws up the stump.

The spoke wheel on the end is simply to afford additional force, if necessary, and will give expedition in running the lever back, after the stump is out.

JAMES M. EASON.

[A further account of this new invention, with which the inventor has done us the honor to associate our name, will be given when it shall have been put into actual operation. Of its success we have no doubts.—ED.]

Sorghum Sugar and Syrup.

The high price of sugar and the probable further advance consequent upon the war in Cuba, and the destruction of the crops ordered by the revolutionists, give additional importance at this time to the subject of sorghum sugar-making; and any light that can be thrown upon the question will be hailed with pleasure by our people.

Is the method known as the "Southern Process" an assured success? The late Report of the Committee, appointed last spring by the South Carolina State Agricultural and Mechanical Society, seems to settle this question pretty conclusively in the affirmative. The committee, having visited the works of Messrs. Passmore and Wilhelm, at Greenville, S. C., and taken pains to observe minutely every stage of the process of manufacturing syrup and sugar from the Black Imphee, grown in the immediate neighborhood of the works, unite in saying that they are satisfied of the value of the process. They add:

"There is no doubt that a superior quality of syrup and sugar may be produced by this process (which is known as the Southern Process) from the Black Imphee, grown on our own soil. We therefore take pleasure in recommending the process to the favorable consideration of the Convention. We believe that its adoption by the agriculturists of the South generally, would furnish a profitable branch of industry to our people, and add largely to the resources of the country. We have deemed it proper to make this Report, inasmuch as in our former Report we were unable to speak from our own observation of the value of the process for making sugar from cane grown on our own soil.

J. P. MOORE.
T. Q. DONALDSON.
L. WILLIAMS.
D. W. AIKEN.
B. Z. HERNDON."

We should aim to diversify our industry, and here seems to be one of the many directions in which we can extend our operations with profit. We shall look for further developments with interest, and invite those who have experience in growing the sorghum, or in the manufacture of the sugar and syrup, to give us brief, practical articles on the subject.

The Manufacture of Agricultural Implements.

Something is already being done in the way of manufacturing agricultural implements in the Southern States, but there is evidently room for a large extension of this branch of industry. The immense demand for improved implements, which is sure to grow out of the reform in our systems of cultivation now in progress, should be met at home by renewed activity on the part of inventors, mechanics and manufacturers. Messrs. Jas. M. Eason & Bro., of this city, have set the example in giving us the new stump extractor, a drawing of which we present in this number of THE RURAL CAROLINIAN.

A correspondent of the *Macon* (Ga.) *Telegraph*, writing on this subject, says:

"This branch of manufacturing, in the North and West, is now making profits varying from fifty to one hundred per cent. I myself am paying to a firm in New York eight dollars for a plow the prime cost of which is only three dollars. This plow is the universal cotton sweep of the Southern States, and from one to two millions worth are used annually in every conceivable form for cultivating the fields of the Cotton States.

"I am paying a firm in Baltimore six dollars for a plow that they charged me only three dollars for before the war, and the prime cost of which is only two dollars now."

The editor of the *Telegraph* very truly adds:

"Now, who can doubt that a very successful business in the manufacture of the best class of agricultural implements is at the command of anybody who will establish such an enterprise on a proper foundation of skill and capital? Labor is cheaper here than in the Northern States, and the lumber, which is the principal material required, does not cost half as much, while the iron and castings would probably cost very little more. The *protection* offered to Southern manufacturers of such goods in freights alone would afford a considerable profit—for the goods are bulky and the freights necessarily high."

Experience with a Stump Puller.

Impressed with the idea that if we would use improved agricultural implements, or even plow deeply, we must first clear the ground of stumps, we purchased, in Hammond, N. J., a Pressey Stump Extractor.

The ground we wished it particularly for, near our stables and stock yard, had been near a saw mill, consequently had been cut over and grown up in second growth very thickly.

We, therefore, purchased the lightest machine, a sixty-five dollar one, for quick work.

We have had the utmost satisfaction in its use. With four men we have taken out one hundred stumps per day. Some, which we have lifted without cutting a surface root, have brought up with them two hundred cubic feet of

earth—that is, we drew out roots extending five feet on each side of the stump and two feet and more into the earth beneath it. We have never seen a field prepared as this was for cultivation. Some say it will not pay to take out stumps.

One jerk of the horse against a root loses more force than is required to take it out after the machine gets its hold. When I say that we took 400 from a half acre, you can imagine how the surface of the ground was covered by them, and could fancy what a time the plow would have had working among the roots.

You could have thought of the labors of the bull-tongue and hoe through the weary years before their decay, and might have had some doubt whether, with the scratching cultivation, which alone could have been attempted, the soil each year might not have been washed away, going quite as fast as the stumps themselves.

We have been glad to see the model of a stump puller in the hands of Messrs. Jas. M. Eason & Bro., which we hope will prove to be just the thing.

We may be told that our lost fortunes can be restored by a pull, a long pull and a pull all together.

We are quite sure it can be done by each one's pulling his own stumps, and allowing nothing in the way of an improved agriculture to stump us.

LEWIS M. HATCH.

Size of Nails.

The following table will show any one at a glance the length of the various sizes, and the number of nails in a pound. They are rated from 3 penny up to 20 penny. The first column gives the number, the second the length in inches, and the third the number per pound; that is—

3 penny	1 inch	557	nails per lb.
4 penny	1½ "	352	" "
5 penny	1¾ "	232	" "
6 penny	2 "	157	" "
7 penny	2¼ "	141	" "
8 penny	2½ "	101	" "
10 penny	2¾ "	68	" "
20 penny	3½ "	34	" "
Spikes	4 "	16	" "
Spikes	4½ "	12	" "
Spikes	5 "	10	" "
Spikes	6 "	7	" "
Spikes	7 "	5	" "

From this table an estimate of quantity and suitable sizes for any job or work can be easily made.

Department of Labor and Immigration.

The Industrial Education of Southern Women.

There can certainly be no higher claim made upon the generosity or pride of Southern character, than is made by the remembrance of the past fidelity conjoined with the present destitution of Southern women. The lofty heroism evinced in their devotion to the true principles involved in our late war; their ready performance of whatsoever their hands found to do to alleviate suffering and administer Christian consolation; their faithful, prayerful and courageous conduct till the last fearful blow struck the liberties of the South into the dust; and when it was all over, the real Christian-like nobility displayed in their resigned acceptance of an humble destiny linked with a condition of precarious toil, which they yet performed so as to lend to it the charms and graces of a queenly dignity; these, we say, are considerations which should commend to our liberality the propriety and justice of permanently placing our noble sisterhood above the contingency of possible want.

Heretofore, it seems, we have thought but little of the matter: we have wanted some one to lead off with suggestions, to infuse a little energy, which might act like leaven, into the mass, and in this way success might have been easily enough secured in a work for which all feel an affectionate interest.

But it is far more difficult, after all, than may be imagined; for in society the sordid and the ignorant, but well meaning, (and such always act in concert,) quite outnumber the intelligent, humane, energetic and public spirited, who are capable of feeling an interest in such subjects.

As for ourselves, we could never even think without indignation of the usurpations by strong healthy men of every kind of work which ought to be resigned in favor of women, and which may be equally well performed—perhaps better—by women. We refer to such light but remunerative work as printing, lithographing, telegraph operating, painting of a rough kind where talent and industry are sufficient qualifications, as well as of the kinds which require high combinations of genius. In doing the rough work the plastic power necessary to the creations of art will be discovered, and preparations made for its special cultivation. Other kindred employments equally adapted to the skill aud genius of woman will be readily suggested to the thoughtful mind. And just here let us say, *par parentheses*, that the proposal is not to abolish the feminine feature of our society, nor force upon Southern women such work as will induce them to abandon the cultivation of those graces, without which woman is no longer woman, or throw aside those motherly, sisterly or wifely virtues, which make the well-ordered household so divinely beautiful. Nor are we blind to the fact, that in a great measure those deli-

cate graces are seldom cultivated now in the Northern female character, which is put in gross antagonism to the male in reference to industrial competition. But we know that feminine insolence instead of feminine grace, has been long since the order of the day among Northern women, who have gradually, and with a really philosophical instinct, (we cannot call it anything else,) encroached upon the rights and liberties of the other sex. It did not begin with want of employment; but it did begin with a want of, first, correct social principles in the particular section where they were born; and secondly, a true appreciation of morality, drawn from Bible sources and fixed upon a deep lying respect for the wisdom, beauty and strength of human civilization, and the relative conditions and duties which it imposes upon women, as opposed to the monstrous innovation preached and practiced by "representative women of the age" at the North.

In the enumeration of work submitted, we are guided by a circular letter, published quite recently, addressed to Mr. George Peabody, and to be sent to him as soon as ten thousand signatures of Southern women can be obtained, to engage his liberality in the establishment of an institution in some one of the Southern States, for the education of the girls in the various useful professions named.

The letter sets out the necessity for our women to prepare for the hardships of their situations, and to begin in every instance with the rudiments, as their practical culture has rarely extended beyond teaching and sewing—occupations almost invariably repaid with ingratitude and squalor. Upon the whole, it breathes a noble and ingenuous spirit, and especially is the principle of the charity, which Mr. Peabody is asked to dispense, to be commended, for it is a genuinely good one which proposes to put the poor in condition to help themselves independently. O, royal charity! such is the beneficence of an Heavenly Father to the favored of his children. But we are inclined to object to the plan proposed in the letter on the ground of its inadequacy. It wants breadth. An institution of the kind for all the Southern States would be wholly insufficient as a means of educating anything like a fair proportion of their girls; and at the very least, it would take a tediously long while for such learning, with no more adequate provision, to become in any just measure disseminated over the States. But it is enough to name the objection.

We think proper energy and industry, intelligently directed, will readily vindicate the feasibility of erecting such schools, in the main independent of private bounty, in every one, or nearly every one, of the Southern States. If the newspapers of South Carolina, for instance, with one accord, and acting in concert, would take up the subject and press it upon their readers, urging them to press it upon their neighbors who do not read, and all private influence could at once be made to bear upon the same point, we should soon have an institution which, for its great and varied uses, and its peculiar fitness to fill the gap in the policy of our social system with exactitude, would far surpass all the "Soldier's Monument" schemes and projects for the removal of the Confederate dead from distant battle-fields to Southern cemeteries,

ever started; for these latter can only be thought justifiable, not to say worthy, when there is no longer need to provide for the actual wants of the wives and children, or it may be mothers and sisters, of those whose remains it is proposed, at immense cost, to remove. We speak now where contribution is made for a general and indiscriminate removal; we know private families of wealth may desire to remove the bodies of their loved ones, and it is right they should when they can afford it. But otherwise let the money so employed be given to relieve physical suffering in this life instead, and the act will be gratefully approved by the spirits of the departed heroes, (if departed spirits are permitted a retrospect of this mortal life).

We shall now endeavor to approximate as nearly as possible an estimate in figures of what might be done for South Carolina; and the same, or even more, may be accomplished in sister States. Fifty thousand dollars ought to be raised here in furtherance of so worthy an object, the first year. This would abundantly endow the school, and with aid procured elsewhere, its first year may be successfully passed; after which time, with such further aid as our people can afford, it may be made self-supporting. This is substantially the plan proposed in the letter to Mr. Peabody, except that it does not contemplate complete dependence on private donations for its establishment. Furthermore, it possesses advantages superior to that plan, and may be reduced to practice with greater certainty and ease, since the most difficult and extensive enterprises are readily accomplished when public interest has been once turned in their favor.

So let it be seen that the movement is a success, despite opposition or indifference; that the work is finished and the question is no longer, Shall it be built? but will it stand? and we believe there can be no mistake about the election which such a change of the question will require the public to make.

Such are the difficulties in the way of reform in our social condition. We need not fear them; they are not formidable; and we should not have said so much concerning them, perhaps, were it not that a great many who read these pages, might, if unadvised, take their position passively against the movement, as one in which they have no practical concern; but who, with the truth understood, as we have endeavored to explain it, will become boldly and actively engaged in its favor.

Our State, in order to complete its social independence, should, if necessary, begin the manufacture of her own staples within her own dominions, in a style worthy of the textile, and so build up her commercial ports, and give direct encouragement to immigration. Let the institution we speak of be the initial enterprise. These results cannot be accomplished in a year; but that they may be in a comparatively short time no one who has seen the fine result of active and well-directed individual effort, and will by that measure the otherwise incalculable product of the organized and united effort of our entire State, can for a moment doubt. And we say all this, notwithstanding the onerous and unjust taxation under which the people groan, and thinking too of the ruin of beautiful homes, of scattered treasures, of spoliation and plagues,

which, united like a besom of destruction, overswept the land, and are now succeeded by an almost omniprevalent destitution; for, with all these evils in view, the more greatly should the necessity be felt for a thorough and immediate remedy.

What is the ground upon which our age so vauntingly bases its claim to the designation "enlightened?" What becomes of the boast of our superiority over the savage—in chivalry, in refinement, in the elevation of woman? What right have we to characterize our race as brave, generous, honorable, refined, Christian? How can we arrogate to ourselves, on merely Quixotic notions, the highest virtues, while secretly confessing to our own consciences, and openly beholding as a characteristic of our race, a trait which augments in degree as we descend into barbarism, and wholly disappears as we mount into the poetry and perfection of civilization? We mean the want of that peculiar character of the best types of man of dignifying women with equality with itself, and placing them above the grosser influences and associations of this life; of preferring her in every particular to what is delicate or refined, and wherever the beautiful may be contemplated, the agreeable enjoyed, or appropriate tastes gratified; of making her, in short, the special object of a judicious and mind-approving respect.

"I would have hid her needle in my heart
To save her little finger from a scratch
No deeper than the skin,"

is the sentiment which every true man should bear about in his heart towards woman. But even coming up to formulas of a cold respect, what possible right have we to the worthy distinctions we claim, when thousands of women in our land are destitute, who are entitled to our consideration by reason not alone of abstract ideal right, but because they are our sisters, weaker but not less worthy than we, bound to us and identified with us by every token of the past and every hope of an honorable future. P. J. MALONE.

Donations of Lands.

A gentleman owning large tracts of valuable land in Beaufort Co., in this State, suggests, as a remedy for the evils growing out of negro domination and the sparseness of the white population in that part of the country, the encouragement of immigration by donations of land, and backs up his suggestion by offering to give three-fourths of his best land on the conditions set forth in the following paragraphs. He refers those who may desire his address to Mr. Joseph H. Oppenheim, Immigration Agent, Charleston, and W. C. Alden & Co., New York:

CONDITIONS OF DONATION.

1. That the immigrants shall occupy the land five years, and when they sell (if at all) it to be to other immigrants.
2. That the donees have no dealings or intercourse with the African race.

3. That so long as illiterate negroes sit on juries, they will never have recourse to law, (except when compelled as defendants,) but will settle among themselves all disputes by means of arbitration courts, established in every township or neighborhood.

One of my neighbors writes me that he will give at least 1400 acres, perhaps more. No doubt all, or nearly all, will eventually do likewise. The writer will donate three-fourths of his best cotton and rice lands, and they are not surpassed in value, according to their extent, in this county.

2,200 acres to Chinese farm-hands.

600 to 900 acres to certain European immigrants, Germans, Swedes, Norwegians, Danes, English, Scotch, Poles.

I am ready, for one, to follow any other plan that may appear better. Can you not, Mr. Editor, suggest a better one?

Respectfully,

SUBSCRIBER.

Grahamville, Beaufort Co., S. C., November, 1869.

We have already signified our approval of the general principle of giving a portion of our surplus lands to actual white settlers. The conditions to be affixed to such gifts may be allowed to vary in different cases, so far as consistent with the great ends in view. We think our correspondent's second condition too sweeping, and that it would be found impracticable. His first and third conditions are excellent.

Mechanical Ingenuity in Farmers.

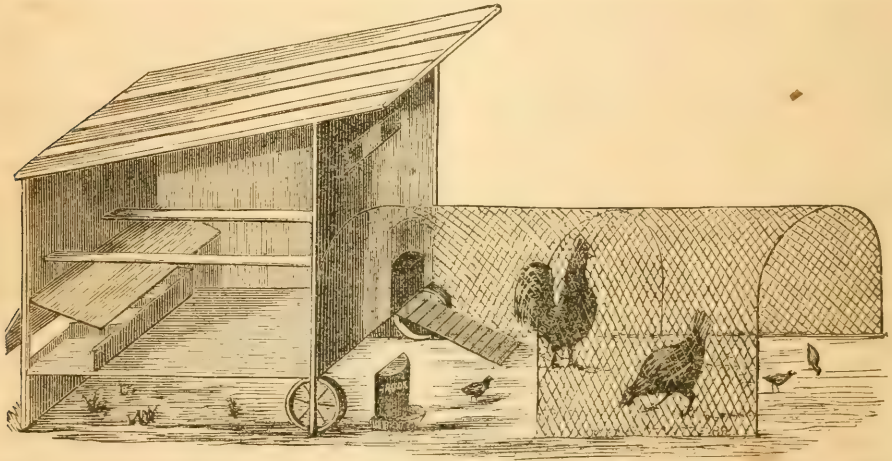
One of the component parts in a good farmer is *mechanical ingenuity.* Some lose half a day's time for want of knowing how to repair a breakage, which an ingenious person could do in five minutes. A team and two or three men are sometimes stopped a whole day, at a critical season, for want of a little mechanical skill. It is well for every farmer to have at hand the facilities for repairing. In addition to the more common tools, he should keep a supply of nails of different sizes, screws, bolts and nuts. Common cut nails are too brittle for repairing implements, or for other similar purposes. Buy only the very best and anneal them, and they will answer all the ordinary purposes of the best wrought nails. To anneal them, all that is necessary is to heat them red hot in a common fire, and cool gradually. Let them cool, for instance, by remaining in the fire while it burns down and goes out. One such nail, well clinched, will be worth half dozen unannealed. Nothing is more common than a farmer to visit a blacksmith's shop to get a broken or lost bolt or rivet inserted, and often a single nut on a bolt. This must be paid for, and much time is lost. By providing a supply of bolts, nuts, and rivets much time and trouble may be saved. They may be purchased wholesale at a low rate. These should all be kept in shallow boxes, with compartments made for the purpose, furnished with a bow-handle for convenience in carrying them. One box with half a dozen divisions, may be appropriated to nails of different sizes; and another, with as many compartments, to screws, bolts, rivets, etc. Every farmer should keep on hand a supply of copper wire, and small pieces of sheet copper or copper straps. Copper wire is better than annealed iron wire; it is almost as flexible as twine, and may be bent and twisted as desired; and it will not rust. Copper straps nailed across or around a fracture or split in a wooden article, will strengthen it in a thorough manner.

Stock and Natural History Department.

Portable Poultry House.

Almost every one is desirous of keeping a few fowls, and while they desire to give them fresh food, earth, etc., it is often difficult so to do, when kept in any stationary coop.

The accompanying cut, taken from the *Cottage Gardener*, presents a convenient and at the same time cheap design for use on small places, and we imagine will be of interest to a great number of our readers. It is exceedingly portable, as light as possible consistent with durability, and very economical of space, besides possessing excellent interior arrangements for the comfort of the fowls for roosting, laying, etc. The nests are so arranged that any lady can collect the eggs without going inside the house. The open space under the house affords ample retreat for the inmates on wet days. The whole being mounted upon wheels, and provided with side fall-down lever handles, it can readily be moved about, and these houses represent one of the most useful improvements in poultry arrangements.



They are equally adapted to either garden or farming purposes, the land becoming enriched and cleared from insects at a small cost, with benefit to both proprietor and fowls.

Mange on Cattle.—Lewis F. Allen, in *American Cattle*, urges cleanliness as a preventive, and gives the following ointment as a remedy: "Two ounces elecampane root, powdered; two ounces sulphur *vivum*, powdered; mixed with hog's lard." Another ointment is a half pound hog's lard, one ounce oil of vitriol, gradually adding the latter to the lard.

Mill-Pond Oysters.

Mill-ponds are a peculiar variety of oyster produced by the circumstances under which they are grown. They can be compared only to the celebrated *green* oysters of France, from which, however, they differ in color, as well as in species. They are always of a dark tint, the mantle fringes are nearly black, the body of the animal being of a deep rich brownish-yellow, which contrasts strongly with the white flesh of the best channel oysters, and this yellow color is often imparted to the interior of the shell. It is said that oysters grown in the manner of mill-ponds, abound in nutritious principles, and are consequently more desirable as food for invalids than even the excellent channel oysters, such as the Shrewsbury and other New York brands. However this may be, it is certain that their flavor when in good condition, in the opinion of the best judges, is superior to that of any other oyster, and the oyster from Gulla Island has enjoyed a special reputation for this quality.

They often reach a great size, but in that case are apt to be tough and tringy. The best sizes are those averaging about five inches in length. The only drawback in this oyster is inseparable from the mode of its production. Being grown in shallow water, its spawning season is extended late into the fall, and it does not begin to recover the solid fat, for which it is remarkable, until the latter part of November, when the channel oysters have already been long in very good condition. From that time until April, the Gulla Island oyster steadily increases in its peculiar plumpness and flavor, and those who wait upon it are not disappointed, though many become so fond of its peculiar qualities as to use it in preference to other oysters long before it has acquired perfection. M.

A Stock Law Wanted.

We are in great need here of new stock laws. The old laws are still in force. They require "a good, strong and *sufficient* fence, six feet high." There is no fence—nor has there been any since the war—of this description in this section, scarcely any fence four feet high, and none "strong" or "good." If by "sufficient" our wise legislators meant sufficient to turn out *any* stock, I doubt if we ever had much, if any. Now there is very little land fenced at all fences generally three feet high or less. Best lands throughout a waste; some of them would be cultivated if every one who owned stock was responsible for the damage they did, as in most other countries. There is indeed but very little stock now in the country, probably not the fiftieth part of what there was before the war, and at least nine-tenths of the people here would favor new laws about stock. There is not one voter in ten who owns any stock at all, and it does seem hard that the poor man A, owning lands but no stock, should have to fence off his fields to keep out the stock of his rich neighbor B. A man has no more moral right to pasture his cattle on my woods and grass, than he has to pasture them on my wheat-fields, or to fell and sell my timber. Besides, if each one was compelled to pasture his stock, it would be a great

check upon the depredations of Cuffee, and he would be likely to keep fewer and a better breed of animals.

Usage, they say, makes law. On the Euhaw, time out of mind, the proprietors always kept their stock in well-fenced pastures, and they were never allowed to run out and roam about the woods. They were regularly penned, and the manure they made more than compensated for the expense of fencing and gathering them in the evenings. SUBSCRIBER.

Grahamsville, S. C.

The German Cow "Madge."

This cow is the property of Mr. C. Schalmen, of this city, and was bought on the River Weser, in Oldenburg, Germany, and brought over when a calf by Capt. Weiting, of the North German bark "Gauss." A young bull purchased with it died on the passage, and this heifer arrived in so reduced a condition that it was feared it would not survive; but it soon recovered and grew finely.

The cow will now weigh 1,000 lbs. It has a long body, short legs, a very large bag, and a comparatively small head. Our engraving is far from doing her justice. Her tail has the peculiarity of being covered with very short hair, except at the end, giving it a rat-like appearance. With her first calf, she gave twelve quarts of milk per day; with her second, fifteen; and with her third, twenty. Her feed at present is two quarts of peas, four quarts of rice flour and two quarts of bran, twice a day, with a little hay. In the season of grass, she goes in a small pasture.

THE RURAL CAROLINIAN.

VOL. I.] CHARLESTON, S. C., DECEMBER, 1869. [No. III.

D. H. JACQUES, EDITOR.

RECENT FAIRS.

Since the publication of our last number, the great States, Virginia, North Carolina, South Carolina, Georgia and Alabama have held their annual fairs, and many counties in the South have held county fairs.

It has been our fortune to attend several of these meetings, and we but express the opinion of all intelligent men who enjoyed the same advantage, when we say that they were all highly successful, and must contribute greatly to advance the agricultural, mechanical, and other interests of the South, as well as to foster the social feelings of the people.

We cannot find language too strong when endorsing such gatherings of the people, and feel sure that these agricultural and mechanical fairs will become agencies of great good to the South.

The fair at Richmond was large, both in the display of articles and in the numbers in attendance, and shows how fast Virginia is recovering her former prosperity. The small grains, horticultural productions, and the mineral interests were much better represented there than at any of the other fairs.

The fair at Raleigh was not so large as that at Richmond, but was a great success in every respect, and the display of manufactured articles and the products of the smaller industries was a most gratifying evidence of the prosperity now reigniug in the old North State.

The fair of the South Carolina Agricultural and Mechanical Society lately held at Columbia was, in all respects, most gratifying to the friends of progress and prosperity, and the exhibition of agricultural products, manufactured articles, and stock, was an evidence of the great strides we are making towards that material prosperity, which alone can place us in the high position we are striving to reach. The large numbers who attended this fair were hospitably entertained by the people of Columbia, and great good feeling prevailed. The entire management was most excellent, and reflects great credit on the officers of the institution.

The Georgia State Fair at Macon was attended by a larger number of visitors than any of the others, and more than the town could take care of. The display of articles was very great. We heard much complaint about the management, but all should remember that these are the first exhibitions which we have had since the war, and that some confusion must result from the haste in which things have to be done.

The fair which has just closed in Montgomery, we had not the pleasure of visiting, but hear on all sides encouraging reports of its success.

We would say more about the fair in our own State, but as we shall soon publish and send to our subscribers a full account of the entire proceedings, and as our space is limited, we content ourselves with these few hastily penned remarks, and can only say to our readers that now this ball has been set in motion, let us determine to make our next fairs all over the South excel those just closed, as they surpassed the expectation of even their best friends. Such things must and will do great good; even the gathering of the people together for interchange of thought, must have a most happy effect, and contribute much not only to disseminate agricultural knowledge and promote our material interests, but also to improve our people intellectually and socially. Let every friend of the cause of Southern development and progress feel that there is something for him to do, and determine to do it.

B. F. E.

THE LESSONS OF THE SEASON.

The season now closing, though an unfavorable one in some localities and for certain crops, has proved, on the whole, measurably satisfactory; an ample sufficiency of food for man and beast having been produced in the country. Our successes should encourage us, and even our failures may be made profitable if we will but wisely heed the lessons they are intended to enforce. What are these lessons? These are some of them:

1. *That we should diversify our Agriculture.* The corn crop has proved a partial failure over a large extent of country. The causes of this failure may be measurably remedied in the future, but the necessary changes in our systems of cultivation must be the work of time, and the same failures, in kind, if not in degrees, will occur in the future. We must not depend so largely upon the Indian corn crop for our breadstuffs and food for stock. Our wheat crop was generally excellent, and the quality of the grain superior. We ought to make more wheat. Oats generally do well with us, if sown on good and properly prepared land; rye will grow almost anywhere; and barley promises much as a profitable crop. One of the season's lessons then is, "*Sow more small grain.*"

2. *That drainage has been too much neglected.* During a portion of the season, in some parts of the country, the crops were completely drowned. In most cases a system of drainage, not very difficult or expensive to put in practice, would have prevented all loss from this cause, and given excellent crops, where, as it is, so little has been realized.

3. *That deep plowing and thorough cultivation are perfect preventives of injury from ordinary drouths.* Reports from drouth parched regions declare the crops "in fair condition on lands well worked." This lesson is so important that we shall continue to reiterate it in every form till it shall be well impressed upon the minds of our farmers The experience of thousands confirms it.

4. *That in spite of floods and drouth, faulty methods and ineffective and untrustworthy labor we have made fair crops, generally, and are making noteworthy progress in agriculture.* This is encouraging, and shows how the energies of our people have been developed by the hardships of war and the reverses of fortune.

Let us remember these lessons of the past season, as we make our plans and preparations for the new year, so soon to dawn upon us.

ASHLEY AND EDISTO CANAL.

Had this scheme been carried out eighty years ago, and the waters of the Edisto been united with those of the Ashley, as was contemplated by all the leading men of the State as far back as 1784–'5, how much precious capital had been saved—how many thousands made prosperous, and what new sources of prosperity and enterprise laid open to the country in all the provinces of art and industry. A charter was obtained in 1784 or 1785, by a company numbering almost every one of the magnates of South Carolina in the war of the Revolution. The Gadsdens, Draytons, Rutledges, Pinckneys, Middletons, Dr. Ramsay, and many others, were enthusiastic for the project.

We can readily conceive why it failed in that early day, and in the feebleness of the State just after a desolating war. But the enthusiasm died out. Somewhere about 1842, the measure was revived in the Legislature, and a bill carried through the lower House, chiefly through the exertions of Col. Richard Bedon, Mr. W. Gilmore Simms, and one or two other gentlemen. The bill was defeated in the Senate by the insane opposition of certain tide-water planters, who were persuaded that a canal, with locks uniting these two rivers, would divert the fresh water from their rice-fields, and deliver them wholly to the salts, by emptying the Edisto into the Ashley. Thus this *second* attempt failed also. A third attempt, within a few years, was so far successful as to secure a charter, which is still in existence, and, we believe, under the Presidency of Mr. James T. Welsman. We suspect that no report of progress can be made as yet by the company; but regarding the object as of very great, if not paramount importance to city and country equally, we trust that new efforts will now be made to impart vitality to the enterprise. It might now be galvanized successfully. Had it been

done before, the phosphate beds might all have been developed, and it would have needed but slight canalling of the sources of the Ashley to facilitate the processes of development. Let us hope that these few words will call the attention of President and Directors of this Company to the resources that probably lie within their grasp, and provoke the regards of our capitalists to the money that now lies buried in the swamps.

THE SEASONS AND THE CROPS.

COTTON.

The acreage of cotton culture was increased last spring fully sixteen per cent., *more than a million of acres* being added to the cultivated area. Fertilizers were also more liberally used than formerly, but on account of drouth, (shallow plowing rather, we might say,) the caterpillar and the boll-worm, the production falls far below the expectations of the planters. The approximate estimate of the Agricultural Department, which, we think, too high, is 2,750,000 bales.

INDIAN CORN.

Of the corn crop, as a whole, the Agricultural Report for October says it has had an unusually favorable maturing season, resulting in a very gratifying amelioration of the prospect for a supply of this important staple; yet a full crop—which should not be less than 1,150,000 bushels—can by no means be expected. When the harvest is over, and the local estimates are completed, the aggregate will attest a moderate yield, yet an ample sufficiency for all the wants of the country."

WHEAT.

Of the wheat crop, the Report says, "Had the spring wheat been equal to the winter, it would have been enormous. Throughout the South the yield is unusually large, and the quality excellent. Texas and Mississippi are somewhat less conspicuous sharers in this improvement than other States in that section."

OATS, RYE AND BARLEY.

Of these grains there has been a good yield, especially of the first named, few of the States returning less than an increase of 10 per cent.

SWEET POTATOES.

Returns of this crop are of course imperfect as yet, but there has manifestly been a light yield in most localities; but the crop of Irish potatoes has been large.

ENCOURAGE IMMIGRATION.

Among the agencies for encouraging immigration that have been set on foot among us, one of the most promising is that of affording facilities for the immigrants to get here *cheaply* and by the most direct routes. In this direction proprietors of the Inman line of steamers have made the most liberal propositions and arrangements, and we take pleasure in calling attention to the fact that through their gentleman-like and energetic travelling agent, Mr. Charles J. Rosenberg, they have succeeded in making the most favorable arrangements for the transportation of immigrants and their effects over the various railways of the South; so that our fellow-citizens of foreign birth, who wish to bring over here their relatives and friends, can now do so through this line at a very low rate. Their agents for South Carolina are our well known and much respected citizens, J. D. Aiken & Co., from whom further information can be obtained.

TO CONTRIBUTORS.

We are under obligations to valued contributors for several interesting articles which came to hand too late for the present number, as well as for those herewith presented. All will please accept our thanks. "The Botany of the Rice-Field," by A. M. Forster, M. D., and "Experiments with Fertilizers," by Gen. M. C. M. Hammond, will appear in our next. Who will give us articles on "Sorghum Culture," "Sorghum Sugar Manufacture," and "The Culture of the Castor Bean?" We want short, practical articles on all subjects of interest to the planter, farmer, gardener, mechanic, and manufacturer. Please, gentlemen, remember that this is *your* magazine as well as ours, and you are bound in honor (since you have encouraged us to set up for ourselves that high standard) to help us make it in every way THE BEST AGRICULTURAL JOURNAL IN THE COUNTRY.

FARMERS' CLUBS.

Farmers' clubs may be made eminently useful, and now is the time to organize them in every neighborhood where one does not already exist. Their organization should be very simple. Too much formality in such societies detracts from both their interest and their value. Don't fetter yourselves with too many by-laws and rules. Get together to talk in a free off-hand way about farming. The most important thing is to have a good secretary, who can put into a readable shape the most valuable facts and experience drawn out in the meetings, and send them to the press for publication, so as to benefit the community at large as well as the members of the club. Organize then, study, think and talk about farming, and above all, practice the improved methods learned at the club and in the pages of your agricultural magazine.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Finishing up the work of the year is now in order in every branch of farming; also settling all accounts or preparing to do so, that the new year's business may be commenced aright.

Fences should be repaired and new ones built as occasion requires. Some of the heaviest losses and worst annoyances that the farmer meets, often result from inadequate fences, and when the time comes that other work will press, it is very difficult to give them the attention they require. We must see to it now.

Manure is one of the essentials of good farming, and now is the time to make, collect and prepare it. See articles on "Making and Saving Manure" and on "Fertilizers" in this number.

Grub out roots, extract stumps, burn brush and inaugurate a general clearing up about the farm, preparatory to the commencement of the new year.

Stock should be well fed and sheltered if you wish the animals to come out in a good condition. Because cattle can *exist* in our fine climates without attention, we are too apt to allow them to shift for themselves. This will not pay in the end.

GARDEN WORK.

English peas should be planted this month in our low country, around Charleston and southward. The ground should be rich, but if so from previous manuring, it is better than if made so now by the application of fresh manure, which gives a tendency to produce a disproportionate growth of vines. Early Tom Thumb, (a dwarf,) Dan. O'Rourk and Bishop's Dwarf Long Pod, are excellent sorts for the first crop. Plant in double rows, the drills being about three feet apart. The rows in each drill may be from six to eight inches apart. Even the dwarf sorts do best with sticks, which are to be stuck between the rows.

Cabbage Plants from your August or September sowings may be put out. If necessary, give them protection by throwing your ground into ridges, and planting them on the south side of each ridge. You can cover them slightly with straw in severe weather.

Onions are still in order for planting any time during this month and the next. See November number for directions.

Spinach, Radishes and Lettuce should be planted for a succession. Flanders spinach is best, but Round Leaved is good.

Irish potatoes may be planted about the end of the month, or delayed till January. See article on Potato Culture, in Horticultural Department.

Strawberries and raspberries, if not planted last month, should now be put in at once, to allow them to get well established before the warm weather of early spring comes on.

ORCHARD AND VINEYARD.

Grape vines and fruit trees should be pruned and new ones planted as needed. The ground should be deeply plowed, (and subsoiled if practicable,) and the holes made broad but not deep. Plant apple trees twenty feet each way; peach trees, fifteen; dwarf pear trees, from four to six; cherry and plum trees, from ten to fifteen. Cut off all broken roots, cut the branches back half their length and the leader the same, and set the tree no deeper than it was when in the nursery. A tree properly planted requires no props or stakes. One year old trees are the most desirable to purchase. If not prepared to plant this month, get ground ready for planting in January.

RURAL NOTES AND QUERIES.

MOLES.—Do moles eat corn, potatoes, etc., girdle trees, destroy the roots of plants, and do the other kinds of mischief attributed to them? If not, what animal is the culprit? How shall we get rid of the pest, whatever it is? A. B. C.

Naturalists have generally taken the ground that the mole is exclusively an insect-eating animal, who injures plants simply by breaking the roots which lie in his way, and that it is the field mouse who, following in the mole's burrow, eats the seeds and gnaws the vegetables. Practical gardeners and farmers, on the contrary, are convinced that moles eat their bulbs, roots and grain, and are striving to devise some practicable means of expelling the pests from their gardens and fields. Andrew S. Fuller lately offered through the *Hearth and Home* a reward of $100 for the best trap or other means of destroying them. We look with interest for the result. It is said that if their holes be punctured and half a gill of tar poured in, they will leave and not return. We have not tried this remedy, and have never found anything completely effectual.

PROPAGATING THE ORANGE.—Can the orange be propagated in no other way but by budding? Will it come true from seed? M.

The orange can readily be grafted. It may also be increased by means of layers and cuttings. Trees from seed are true to kind, but as they do not produce fruit till from seven to ten years old, budding on stocks procured from wild orange groves, is generally resorted to in this country. These bear in three years from the bud.

SHALLOW PLOWING.—What soil requires deep and what shallow culture? SUB.

We do not recommend shallow culture for any soil, but a *thin* soil should not be turned over so deeply that the roots of plants cannot find it. Such soil should be gradually deepened, incorporating with it each year as much vegetable matter as possible, and turning up each year a little more of the subsoil than before. It is impossible to give rules that will apply to all cases, but the principle of deep plowing should be accepted by all. We will explain further at another time.

LIME ON BOTTOM LANDS.—I should like either yourselves or some of your contributors to give us as early as possible a *practical* article on the application of lime to our bottom lands specially, also lands generally. C. J.

Will some one who has had experience give us an article on the subject.

TRY ASHES FOR THE BORER.—The editor of the *Iowa Homestead* says:

"Some ten years ago, we tried the effect of leached ashes about the trees, a peck to each tree, close to the body; and of four hundred trees so treated, not one was molested by the borer, while one hundred other trees, not so treated, were many of them badly damaged by them. We have continued ever since to use leached ashes about our apple, pear and plum trees, and have never seen a borer in any tree so treated."

WHO CAN BEAT THIS?—Mr. J. F. Gamble, of Clarendon, has a part of a cotton limb measuring two and a quarter inches, which has on it seven full developed bolls and forms. On another limb, a space of one and three-quarter inches has six bolls and forms. These are near the ends of the limbs, and the whole stalk contains 311 full developed bolls and forms. He planted the Dickson seed.

FOREIGN GRAPES IN FLORIDA.—A Florida editor is enthusiastic over a bunch of "Purple [Black] Hamburgh" grapes grown in the open air. He says, "they were the largest grape we ever saw. The bunch measured 7 inches through and 11 inches long; a decided mammoth, and not *sour* either." Several varieties of the *Vitis vinifera* have been grown in St. Augustine for more than two hundred years.

NORTH CAROLINA IRISH POTATOES.—We received lately some of the finest specimens of Early Rose and Early Goodrich potatoes that we have ever seen from Mrs. Colonel Brown, of Shephardsville, N. C., and they were as excellent in quality as they were attractive in appearance. Why not get our seed potatoes from North Carolina instead of New York?

——We shall be pleased to receive from all parts of the South specimens of valuable, rare, or curious seeds, plants, fruits, vegetables, and minerals that will serve to illustrate the productions and resources of our country.

MERE MENTION.

—— At the late fair of the Buncombe Co., (N. C.,) Agricultural Society, Col. L. M. Hatch exhibited two beautiful Cashmere goats, which were much admired. Col. Hatch intends to grow these animals extensively for the fleece, the hair being worth $1 per pound in New York. We have specimens of this hair on exhibition at our office.

—— Benjamin Baker, of Key West, Fla., has sold his crop of pineapples this year for nearly $7,000. This crop was gathered from less than an acre and a half of ground.

—— More than 10,000, probably 15,000, visitors landed at Jacksonville during the last season, some remaining there and others seeking accommodations in various parts of East Florida. It is expected that the number will be much greater this season.

—— Fuller & Earle, of "Woodside Garden," (Ridgewood P. O.,) New Jersey, have favored us with plants of several new varieties of the strawberry and the raspberry, to be tested in our experimental garden. They will please accept our thanks.

—— It is said that red cedar twigs bound around the bodies of fruit-trees, with the butts upward, will effectually protect the trees from all injurious insects.

—— Henry Albury has established a fishery at Sarasota Pass, in Manatee County, Fla.

—— An Arkansas paper concluded an account of the accidental killing of a citizen as follows: "The deceased, owing to his frequent marriages, leaves several families of numerous children, but bequeaths little else to the world."

—— The Chicago *Svenska Americanaren* says: "Henry Ward Beecher ar utom all fraga Amerikas rykbaraste man inom det and liga brodraskapets leder," which, we think, must be eminently satisfactory to him.

—— The Chinese have been observing the annual celebration of the annihilation of the evil spirits in California.

—— A gentleman in New York has received an order from Europe for 21 tons of Ramie.

—— Some Buff Apples from Buncombe Co., N. C., lately presented to THE RURAL CAROLINIAN by Col. L. M. Hatch, were very fine and of large size, though smaller, than usual this season, he informs us.

—— We are indebted to A. M. Purdy, Palmyra, N. Y., for plants of his new Golden Thornless Raspberry. We shall take pleasure in giving it a fair trial in our climate, and reporting the result.

—— In the Island of Goa, near Bombay, there is a singular vegetable called the sorrowful tree, because it only flourishes in the night. At sunset no flowers are seen, and yet after half an hour the tree is full of them. They yield a sweet smell, but the sun no sooner begins to shine upon them, than some fall off and others close up. The tree continues to flower in the night during the whole year.

—— A French agriculturalist proposes that the vessels occupied during the summer in cod-fishing, should in other seasons be employed in collecting and transporting to the Azores the sea-weed which is to be found in large quantities west of these islands.

—— The castor bean, from which the oil is made, is becoming an important industry in Perry County, California. One prominent dealer received at his warehouse 1,000 bushels in one day, paying $3 18 per bushel. It yields more bushels to the acre than wheat.

—— The New Orleans *Times* says Roezel's machine for separating the fibres of the Ramie "is said to be a success." The machine has a metallic cylinder, three feet in diameter, filled up with transverse bars or knives, and is driven at the rate of three or four hundred revolutions per minute.

—— Large quantities of oranges are being shipped from Manatee County, Fla., to Savannah.

—— Some German sparrows have been introduced into the neigborhood of Charleston by Mr. John Campsen, with the hope that they will ultimately clear the country of the cotton caterpillar.

—— One orange tree on the St. John's nets the owner $75 annually.

—— An interesting experiment is about to be tried in a Massachusetts town. Fifty families, with a capital of ten thousand dollars, propose to try coöperative living.

—— Nineteen ounces is the weight of oranges about Tampa—occasionally.

—— There is (or was) a corn-field in Benton Co., Indiana, of 7,000 acres. It is on the farm of Adams Earl, Esq., who resides in Lafayette.

—— The Cypress of Somma, in Lombardy, Italy, is perhaps the oldest tree on record. It was known to be in existence in the time of Julius Cæsar, forty-two years before Christ, and is, therefore, more than 1,900 years old.

—— Prof. Faber, of Hamburg, has constructed a speaking machine which utters various words, answers questions, and even enunciates simple sentences.

—— The Canna is now very much used in French gardening, and is becoming very popular in the United States, because it stands the summer sun so well. The foliage has the appearance of banana leaves, and the tropical character, so valued in gardening, is better obtained in the Canna than in any other plant.

—— A writer in the London *Journal of Horticulture* says that Sutton's ringleader pea is at least ten days earlier than any other of the early varieties.

—— Florida has seven millions of acres of land adapted to the growth of coffee, and the best of the land is said to be South of Tampa.

—— One reason why the Southern climate suits cotton so exactly is because the cool, wooded Alleghanies flank the cotton-fields on the north.

—— There is very little difference in sweet potatoes grown North or South as to size, but they are unlike in sweetness. When a sweet potato becomes cold it grows watery.

—— In Europe the savans have come to the conclusion that 33 acres in 100 ought to be left in woods. Considering the vast extent of treeless prairie in this country, has not this limit been reached already? If so, every farmer should plant a tree every time he cuts one.

THE FLOWER TRADE.—About $1,200,000 worth of flowers are sold annually in New York; bouquets, in winter, often selling as high as $10, and baskets at $100. As high as $500, it is said, has been paid for a basket of rare flowers. Camellias, tuberoses, violets, roses, mignonette, heliotropes, verbenas and geraniums are the staples.

Correspondence.

AGRICULTURAL IMPLEMENTS.

COLUMBIA, S. C., Nov. 17, 1869.

Editor Rural Carolinian:

I had the good fortune to attend all the meetings of the Agricultural and Mechanical Society of South Carolina, lately held in this town, and though I learned several things, I was more forcibly struck with the necessity and advantage of establishing in the State a first-class manufactory for the construction of agricultural machinery and implements than by anything else. In conversing with many planters I was surprised to find how many of them not only thought as I do on this subject, but offered to join in furnishing the capital necessary for carrying out such a scheme.

I make the suggestion through your magazine, and am satisfied that if any of our competent mechanics, the Messrs. Eason, or Hon. Wm. S. Hennerey, or Mr. Henry T. Peake, or Messrs. Gower, Cox and Markley, for instance, should come before the planters of South Carolina for this purpose, that a stock company, with a cash capital of one hundred thousand dollars, can be made up before the end of the year, and then next fall the planters of South Carolina could get what they need, from a plough-share to a steam engine, or a steam plow, (if Col. J. D. Moore should set the example of ordering one,) made in the State, and better made, and at lower price than he can now get it from those who live a thousand miles away. The large profit which it is well known is made by the sale of such articles, would be saved at home, and employment given to our own people.

This is only one of a thousand things that can be profitably done in the South, but which are not now done; and yet, if we ever become truly prosperous, we must use *all* the means to reach this great end. At least one thousand intelligent white mechanics have left South Carolina alone since the close of the war, who, if her people had been wise, would all have been most profitably employed within her borders.

You have my name, and if the proper men will take the matter up, they may count on me for one thousand dollars. F. E. B.

FISH CULTURE.

AIKEN, S. C., Nov. 23, 1869.

Editor Rural Carolinian:

Allow me to call your attention to the great importance of "Fish Culture" in the many noble streams of South Carolina, as among the most profitable of the many small industries which are now being advocated and started for the development of this greatly favored country. I am a Scotch mechanic, trying to earn an honest living while improving my feeble health in this fine climate, and though I know but little of the subject, I can only say that I worked on two estates in Scotland, where only a few thousand pounds sterling had been spent on the stocking of the streams with fish, and the result before I left was that the *waters* brought in a larger return in money to the stewards of those estates than did the entire rent and product from the *lands*.

I have no doubt you know all about this thing, Mr. Editor, and only take the liberty of calling attention to it, because I am becoming deeply interested in the people of the South, who have treated me very kindly for the three years I have lived amongst them.

SCOTLAND.

Department of Literary Miscellany.

A FISHING.

At the early dawn across the wold
We slipt 'mid the sunrise splintered gold,
That tipt and spangled the Autumn leaves,
Which then dropt down by the million-fold,
And shooting aslant the gathered sheaves,
Light rosed the rugged mountain eaves.

Then over the hedge by snow-white huts,
Beyond where a violet headland juts,
We pass by the chest-trees branching gay
Now million-eyed with their blinking nuts,
By the flashing brooklet's frisky way,
Where the lowing cattle leisurely stray.

A league below, where the trees seem stackt
Against the sky, is a cataract,
O'er which like a bourne the brooklet leaps
With volume burning bright and packt—
From rock to rock precipitous sweeps
In the lake's fair breast, and gently sleeps.

It's thither we go with flying feet
By the chestnut boughs, thro' falling wheat—
Gayly and deftly Helen and I;—
Where the waters are spread in a glassy sheet
And map the beautiful morning sky,
With its winged armies tramping by.

There light thro' the lichens tenderly falls
On the tops of cumulus bramble walls,
And now as we near the crystal brink,
A vagabond fish-hawk loudly squalls,
The hare that timidly came to drink
Hops "pit pat" off if we do but wink.

All nature, in brightest robes arrayed,
Is buzzing and blooming in sun and shade,
The gold-finn'd fishes gambol and slide
In shallows where shaggy rocks are laid,
Now shimmer and curvel and glance and glide
In the sunbeams falling deep and wide.

Thro' the live-long day we dropt the hook
In coziest corner of rock and nook,
Which coverts of greatest fishes are—
Corpulent nobles and lords o' the brook,
The impudent jack with the blazing star,
And that greedy *nondescript*, the gar.

Now all save the insect hum is still
Like a Sabbath eve: far up the hill
We wander with tackle and lithe limb,
And back again by the sloping hill
Whence the dot-like huts look pale and dim,
And the sun sits clear on the Western rim.

And here we call to the lowing herd,
And watch the flight of the evening bird,
Then gather our tackle and fishes three,
Which flutter and faint on the yielding sward,
And quietly take our way with glee
Back under the moon to Enerslie.

P. J. MALONE.

MARRIAGE CEREMONIES.

The ancient Scythians, being a warlike people, would not marry a maiden who had not killed an enemy. Among the Nestorians, on the wedding-night, the bridegroom gave the bride a kick, and commanded her to pull off his shoes as a token of her submission to him. In Chaldea, on the wedding-day, the priest came into the bridegroom's house and lighted a fire, which was thought ought never to be put out until the hour of the death of one of the pair. If, during the life of either husband or wife, the fire went out, it was considered a sign that marriage between them was dead also. Among the ancient Assyrians, all the marriageable young girls were assembled in one place, and the public crier put them up to sell, one after another. The Babylonians, also, had a kind of market of their daughters at certain times every year. Assembled in a public place, where they were exposed to gen-

eral view, they were disposed of to the best bidders. In modern Egypt, a woman can never be seen by her future husband until after she has been married. Negotiations, however, are usually conducted by professional women, who see the offered bride and report to the masculine candidate. A similar custom prevails in West Barbary, where the bridegroom does not see his bride until he is introduced to her in the bridal chamber, but a woman, on his behalf, watches her in her bath, and reports as to her charms and defects. In the Molucca Islands, the same custom prevails. Among the Medes, a man was not considered entitled to a full degree of respect unless he had seven wives, nor a woman unless she had five husbands. So says Strabo. The nobility might have as many wives as they pleased, but all over seven could be parted with at discretion. A Persian's mode of making love was to burn himself in some visible part, in order to prove has faithfulness to his mistress, who, if she accepted him, gave him silken scarfs to bind up his wounds. An odd marriage ceremony among the Persians was for the parties to meet at moonlight on a bed, in the presence of two sponsors, who held rice in their hands. The sponsor for the man, touching the woman's forehead, asked her if she would have the man, and the sponsor for the woman performed the same ceremony to the man. The hands of the parties were then joined, and the rice scattered over them. Among the Vizerees, in Persia, when a woman is smitten with a man, she sends the drummer of the camp to fasten a handkerchief to his cap, with a pin she has used to bind up her hair. This is done by stratagem in public, and the victim is obliged to accept the woman, provided he can pay her price to her father. Among the Circassians, the bride was conducted to the groom's house, attended by relatives and by musicians. On entering the house the bride kicked over a pitcher of wine placed in the middle of the apartment, and scattered the paste in a vessel of bread dough, at its side, against the walls. At a marriage in Benares, in the East Indies, the man and woman go into a stream of water together, a priest being present. This official performs the ceremony of marriage by pouring water on a cow, and tying the couple together by their clothes. They then walk round the cow, and a few other forms complete the union. With a tribe in Neilgherry it was the custom for the maids and bachelors, who wished to get married, to erect a hut inside an enclosed space of ground, with a thick fence around it, so that the women within the enclosure, and the men without, could not see each other. The females then went into the hut, and the males thrust long sticks through the fence. Simultaneously the former came out of the house, and each one caught hold of a stick, the owner of which became her husband. At Amboina, in the last century, the marriage ceremony consisted, principally, in throwing backward and forward an egg into the wide sleeves of the bride and bridegroom's outer garments. In seven days after the wedding, the couple were obliged to sit together, looking solemnly upon the ground. Among the Dyaks, in the East Indian Archipelago, no man is allowed to marry until he has decapitated a few heads, in order to make room for his probable progeny. The Ottamaques, of South America, always united a young man to an old woman, or a young woman to an old man, the reason being that the discretion of the elder might curb the impetuosity of the younger. With some South American Indians, a virgin was not chosen for a wife, virginity being regarded as a sign that the woman had not the art of making herself pleasing to man.—*Wood's "Wedding Day in All Ages."*

SIEMPRE VIVA.

A letter from Guayamas, Sonora, Mexico, describes some of the strange and beautiful things found in that remote region, including a species of evergreen, as follows: Passing on beyond Aribechi, about two miles, we struck the bed of a stream through which we commenced our progress to another range of mountains, whose slopes came down to the very edge of the channel way. It was here that we found the north sides of rocks which faced the stream, covered by what at first seemed to be the most exquisitely beautiful green mosses that ever decked the rugged sides of a mountain. The entire sides of the mountain at this spot were blooming in the liveliest green. We dismounted to pluck some of these plants and found that they were not strictly mosses, though undoubtedly they belong to that class of plants. Each one had separate roots firmly holding it to the rocks, and from these roots grew out a plant that opened to the diameter of a common teacup or a saucer, and spread itself flat on the face of the rock. The leaf somewhat resembles in texture the *arbor vitæ*. These plants bear the name of *siempre viva*—always living, or always alive. Their peculiarity is to come out into beautiful green life in the rainy season, and then when all moisture has deserted them, to turn as brown as autumn leaves, and roll or curl themselves like a ball, as uninteresting to see as a brown stone, seemingly dead But with the return of moisture they uncurl their leaves and spread out again as beautiful and green as ever. Another peculiarity of the plant is, that you may pluck it, throw it into your saddle bags, and keep it six months; and then place the roots in a cup or saucer of water when you retire for the night, and in the morning you will find by your side a lively, green plant. It looks like magic; but I have tried it to my surprise and

delight. The plant never dies; its life is immortal, and its beauty of texture, and form and color is renewed or continues with the continued supply of moisture.

Hygiene and Household Economy.

LETTERS FROM A HOUSEKEEPER—I.

My Dear Carrie: You ask me to tell you all about my house and my housekeeping; how I have furnished my rooms, how I cook, and what we eat; how I manage my servants, and so on. Well, that is more than I can do in one letter, but I will here make a beginning, and in future letters try to give you an idea of Southern life as it is "since the war," or at least of our "reconstructed" housekeeping.

In the first place, our new house which you inquire about is an old one, and, like the rest of Southern houses, at present sadly out of repair. It is out in the suburbs of the town. Harry fancied it because there was a large garden attached, and orange, lemon, fig, pomegranate, and peach trees in the yard. The oranges are now growing golden in the autumn sun.

Our people here have what you would call a queer way of placing their houses, with the gable end towards the street. The front looks out upon a beautiful flower garden, somewhat shaded by trees, which makes it so delightful in summer. There is a large orange tree loaded with fruit right in front of the veranda. This veranda—a double one—that is consisting two stories like the house itself—broad, high and strong, and extending on two sides of the house. Without these verandas our houses would look mean and bare, and in summer be hot and uncomfortable.

Well, the house is not large for a Southern house, yet your cosy little cottage would look like a child's play house by its side. We used to build here on a liberal scale, for hospitality as well as for comfort. If our people ever build new houses again, they will build differently I suppose.

But I reckon you will care more to hear about the inside of the house and its arrangements than about the outside. Well, this house which looks so big and grand, with its broad verandas, has only four square rooms, two on each floor, with a pantry off on the first floor and a dressing room on the second. When I first moved into it, it seemed sombre and gloomy, but a little scrubbing, a little whitewash, and a little paint has put a new face upon it, and I am now quite in love with the place. It looks home-like and cheerful, and I feel some pride in the part I have played in the work of transformation.

You imagine me surrounded by servants, Dinah, Milly, Topsy and the rest, with Sam for a gardener and Bill for an errand boy. My dear Carrie, you are thinking of things as they were before the war. *Nous avons changé tout c'la*, or rather the Yankees and the niggers have changed all that. You think us a poor, dependent, helpless set of people. So we were, perhaps, but we are no longer so. For the proof come and see us and judge for yourself.

In the first place we, like thousands of others, have abandoned the out-door kitchen once universal among us. We turned ours into a wood shed, coal house and workshop. So the first thing was to put up a nice cooking range in the dining-room, which for the present must serve as kitchen and dining-room in one. I might tell you of an amusing story of the awkward negro fellow who undertook to put up the range, and after cutting two ugly holes in the chimney, failed to get the stove pipe in the flue, and the smoking we got when we attempted to build a fire—but no matter, we got it all right at last, and it draws finely.

Well, we "accept the situation," as the politicians say; and, as you will readily believe when I tell you, that I do my own cooking in this "reconstructed" dining-room, superseding Milly, who has been exiled to one of the cabins in the yard, and is retained merely as laundress, while Katy does the scrubbing and house-cleaning and other rough work.

In the dining-room I have put up dark-green paper shades to the four windows, furnished it with a pine table, a side-table, which I covered with oil-cloth, which comes a yard square, some nice, substantial chairs, a lounge, a rocking-chair, a good hemp car-

pet, and, on the mantle, a handsome little clock. The dining-table I have covered with a home-made cloth, a piece of my own handiwork. It is made of black broadcloth, to fall over the edges of the table some eight or ten inches, and is braided with woollen braid, a lighter shade than the cloth, in a neat pattern. The woollen braid looks very well. Flannel may be used instead of broadcloth. This is the way you do it:

Transfer the intended design to French tissue paper; paste the edges of the paper on the cloth; sew on the orange braid (if you have two colors, say orange and green) with fine silk of the same color; tear off all the paper, and sew the remaining color of braid on close to the orange. This will make a pretty cover for a table, piano, melodeon, or on a cheaper scale, a pine table.

Shall I tell you how I circumvented a sly old rat whom no trap could catch and no cat pounce upon, and a countless and everywhere present host of little red ants at the same time, and by means of one simple contrivance? Well, I got a strong tin box made, with a suitable fastening to the cover, and a grated shelf inside, on which to keep my eatables. Mr. Rat was left out in the cold. For a defence against the ants, I had it made with four legs, each of which is set in a saucer of water. This is the only sure remedy for the ant pest that I have found—and ants are a terrible nuisance here.

About my qualifications as a practical cook, I suspect you are sceptical. Somebody else, who ought to know, thinks I am a famous housewife.

Do you not know that I have lived in Florida, "roughed it" in a log cabin, and learned how to make much out of little? My dinners might not suit a pampered epicure; but I can truly say that due justice is generally done them when on the table Wouldn't you like to know what we had for dinner today? I am not going to tell you, but one dish I am sure must be new to you, so I will give you my recipe:

Potato Pan-pie.—I take four or five large sweet potatoes, pare and cut in small pieces, and boil till cooked through. Pour off the water and put them in a baking dish, then put in three heaping table spoonful's of sugar, a tablespoonful of butter, a little salt, an little nutmeg, and last, a cup of cold water; then make a crust like pie-crust, but much thicker, and just large enough to cover the dish; cut a slit in the crust, and put it on top of the potatoes, and bake till a light brown. This dish is not a fancy one for a light dessert, but a good substantial part of a meal, and is pronounced excellent. I could fill a letter, (and perhaps I may one of these days,) with the different ways of preparing our best of all vegetables—the sweet potato, but for the present I must close.

Yours, as ever,

MARIE.

RECIPES.

A Simple Fruit Cake.—One cup of butter, three and a half cups of light brown sugar; beat these ingredients to a cream, put the yolks of three eggs into the mixture, and beat all together; one cup of sweet milk, four cups of flour, in which mix one teaspoonful of cream of tartar, and half a teaspoonful of soda; take some of this flour and rub it into one pound of clean, dry currants, and add them to the mixture, then gradually stir in all the flour, one quarter of a nutmeg, and the grated rind of one lemon; then add the beaten whites of the eggs; pour into a pan lined and covered with white paper, and bake in a moderate oven.

St. Charles Indian Bread.—The celebrated Indian bread, prepared at the St. Charles Hotel, New Orleans, is made as follows: Beat two eggs very light, mix alternately with them one pint of sour milk or buttermilk, and one pint of *fine* Indian meal; melt one tablespoonful of butter and add to the mixture; dissolve one tablespoonful of soda or saleratus, etc., in a small portion of the milk and add to the mixture the last thing, beat very hard and bake in a pan in a quick oven.

Washing Clothes without Boiling.—Mrs. Jamison in *Hearth and Home* says: "I put my clothes to soak over night in soapy soft water, and in the morning rub them out, put soap on the dirty places, and lay them in the hot sun. By the time my last clothes are thus spread out to bleach the first instalment can be taken up, washed out and rinsed. I find nothing like the sun for taking out dirt. Mr. Jamison's clothes that he wears in the field I leave out overnight, and they need very little rubbing. A friend of mine who lives in the South says that from May to September she has her washing done in this way, and her clothes are wonderfully clear and white."

To Crystallize Glass Windows, to render them Semi-opauque.—Make a hot saturated solution of Epsom salts, or, still better, of sal ammoniac. Wet the glass window with this solution, laid on equally with a paint brush. The moisture will almost instantly be evaporated, and the salt be deposited in a very beautiful radiated form. This deposition will admit the light, yet cannot be seen through; and for rendering windows semi-opaque is infinitely to be preferred to paint, paste or other materials employed for this purpose.

Drying Pumpkins.—Pumpkins may be put up in the old-fashioned mode of cutting into rings, paring and drying upon poles; or they may be cut into small pieces, and dried on plates in the sun or oven. A better plan, however, is to pare, stew and strain them, just as if for pies; then spread the pulp thinly upon earthen dishes, and dry quickly in a hot sun, or a partially heated oven.

Barley Soup.—Take two pounds shin of beef quarter pound of pear barley, two onions sliced, two carrots chopped, salt and pepper to taste; place in a gallon pot, fill up with cold water, boil very gently for five hours. Celery tops improve its flavor.

Stuffed Cabbage.—Take a large fresh cabbage and cut out the heart. Fill the place with stuffing made of cooked chicken or veal, chopped very fine, and highly seasoned, rolled into balls with yolk of egg. Then tie the cabbage firmly together, and boiled in a covered kettle for two hours. It makes a very delicious dish, and is often useful for using small pieces of cold meat.

Baked Bread Pudding.—To a pint of bread crumbs add a pint of milk and let them soak thoroughly; add a second pint of milk, four well-beaten eggs, and salt, sugar and spice to taste, together with soda enough to correct the acidity of the bread, (half a teaspoonful is usually enough;) bake half an hour. The number of eggs is arbitrary.

Ginger Biscuits.—One pound of flour, half a pound of fresh butter, half a pound of powdered loaf sugar, three-quarters of an ounce ground ginger; two eggs; bake five minutes in a quick oven.

BUSINESS NOTICES.

To Correspondents.—All articles intended for publication, and all inquiries relating to subjects treated in our columns should be addressed to the editor, and all subscriptions and business letters to the publishers.

Agents Wanted.—Canvassing agents are wanted in every county in the State, to whom the most liberal inducements will be offered. For further information address the publishers.

Wanted.—We wish to obtain a copy of the Report of the Department of Agriculture for the year 1864, for which we will send The Rural Carolinian for one year.

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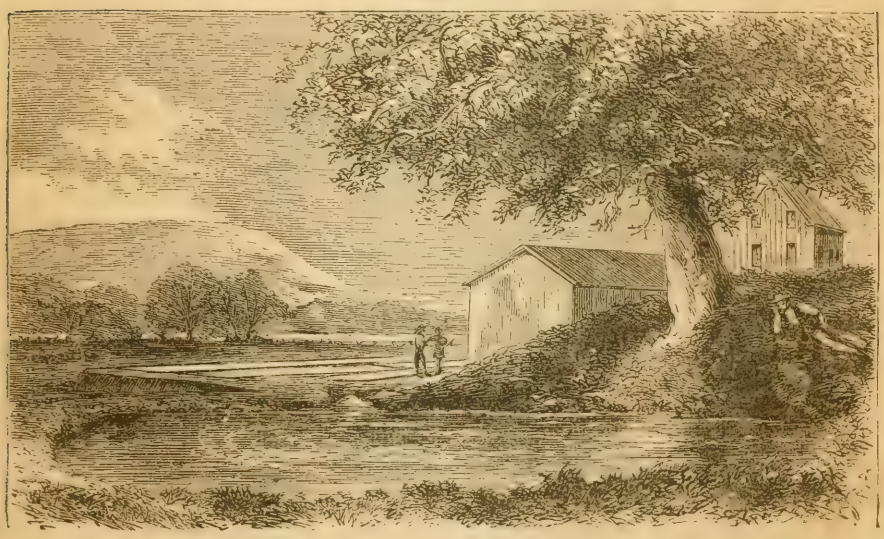
Fish-Farming for the South.



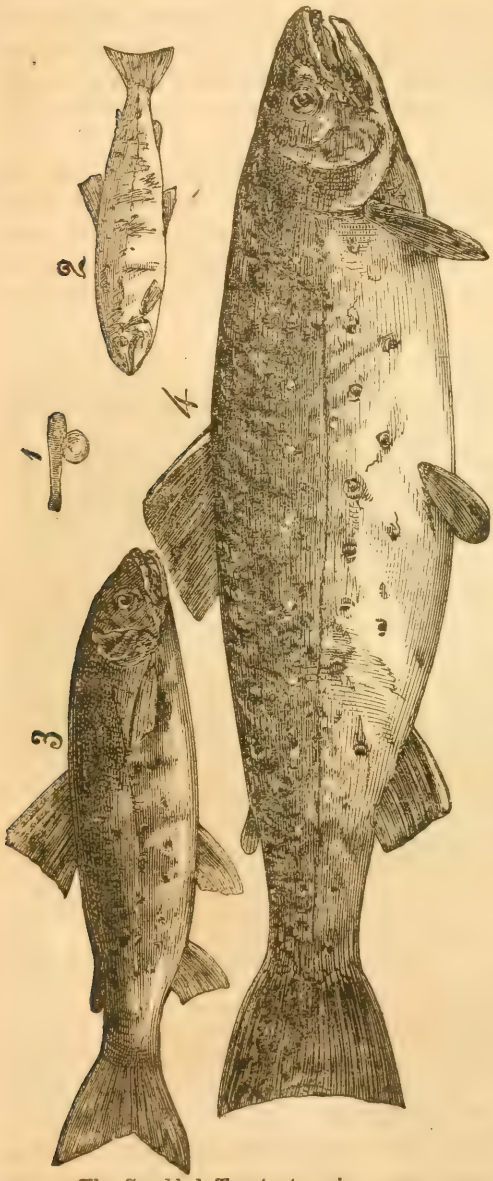
View of a Fish-Farm.

Fish-culture is not a new thing, having been practiced in Europe by Jacobi more than a century since; but it is only recently that it has taken its place as a recognized branch of industry.

In Europe it has assumed a national importance, and has received the fostering care of governments. The National French Fish-Farm at Hunigue, on the Rhine, is an extensive, as well as an interesting, establishment, covering eighty acres, and distributing to all parts of the country many millions of eggs and young fish every year. Its success, which seems to be complete, has led to the founding of a great many other fish-breeding establishments in various European countries.

Salmon have been restored to all the rivers of the British Islands, whence

they had been driven, and introduced into some in which they were never known to propagate in the natural way; and such is the extent of this comparatively new enterprise, that fish has become a cheap and common food in districts where it had long been scarce and dear.



The Speckled Trout at various ages.

Fig. 1. One week old. Fig. 2. Three months old. Fig. 3. Six months old. Fig. 4. One year old.

In this country, fish-culture has made comparatively little progress. A beginning has, however, been made, and we have no doubt progress will be rapid as soon as the conditions of success have been well ascertained. At present experimenters, both North and South, are feeling their way, as it were, to the desired result. We have every reason to believe that it can be made profitable, as a business, but at present we cannot advise everybody to rush into it with the hope of making a fortune in a year. It is rather for the purpose of encouraging those who have suitable streams to construct and stock small fish-ponds for the purpose of providing fish for their own use, than to show the commercial advantages of the art, that we here introduce illustrations of a New Jersey fish-farm, with a brief description of the somewhat complicated process of hatching practiced there.

"TROUTDALE," NEAR BLOOMSBURY, NEW JERSEY.

This place is the property of Dr. J. H. Slack, a thoroughly educated naturalist, who has entered upon the business of fish-farming with a full appreciation of all the conditions of success. We condense some notes of his experience:

THE SPAWNING SEASON.

As the spawning season approaches, the colors of the adult

fishes begin to alter to an extent noticeable by the most unpracticed eye. Losing the bright tints with which they were formerly bedecked, the female trout become dark and sombre in color, putting on a grave and matronly dress. The hues of the males are, on the contrary, more brilliant than before. The distension of the abdomen of the female by the eggs causes the section of her body to assume an oval shape, while that of the male resembled the outline of the eye of a broad-axe. Fierce battles take place between the males, the conqueror celebrating his victory by feasting upon the body of the vanquished.

As their time draws near, the females swim uneasily about the pond, trying the bottom with their fins, seeking for gravel in which to deposit their eggs. The bottoms of the ponds being formed of clay and large stones, they were obliged to pass into the races for that purpose. These had previously been prepared by covering their bottoms with fine gravel, and placing across them obstructions, forming a series of dams and eddies.

ARTIFICIAL SPAWNING.

This is the way Dr. Slack captures the trouts and obtains the eggs and the milt for artificial impregnation:

"Across the lower end of the raceway a net was quietly placed, and the gate at the racehead closed, by which the flow of water was stopped. To avoid being left high and dry, the fishes were obliged to pass down stream, and were thus captured in the net, the fishes being placed for the nonce in a large tin kettle. About a quart of pure spring water was placed in the impregnating pan; a male was then taken and held in the manner depicted in the engraving, (Fig. 3,) the left hand grasping the neck below the gills, and

Securing the Trout Spawn.

the right the body just above the tail. By a gentle pressure with the fore and middle fingers of the left hand, a quantity of the milt was expressed, the amount being further increased by gentle friction toward the tail. This was continued until the water became opalescent or pearly in its appearance. A female was then taken and treated in the same manner, eggs, instead of milt,

being extruded. The eggs and milt were allowed to remain in contact for about fifteen minutes, at the expiration of which time they are carefully washed."

HATCHING THE EGGS.

It has been ascertained by experiment that fifteen grains of the milty fluid of the male is sufficient to impregnate ten thousand eggs; but in practice a much greater quantity is used. The bottom of the impregnating pan, as shown in the drawing, having a depression calculated to hold one thousand eggs, the quantity obtained could be readily estimated. The eggs average one-sixth of an inch in diameter, and weigh one grain each.

After being thus secured, the eggs are taken to the hatching house, which had been made ready for their reception in the following manner:

"The hatching trough had been filled to the depth of two inches with fine gravel carefully boiled, to destroy the eggs of any insects which might have been present; over this a gentle stream of water from the spring, filtered through four screens of fine flannel, was conducted. Upon the gravel the eggs were placed, the greatest care being taken to avoid any sudden jar, as the recently impregnated egg requires the most gentle handling, lest its suddenly acquired life be as suddenly extinguished. After resting in their new location for a few moments, they were evenly spread over the bottoms of the troughs by means of a fine feather. During the entire process the eggs had not for an instant been exposed to the atmosphere."

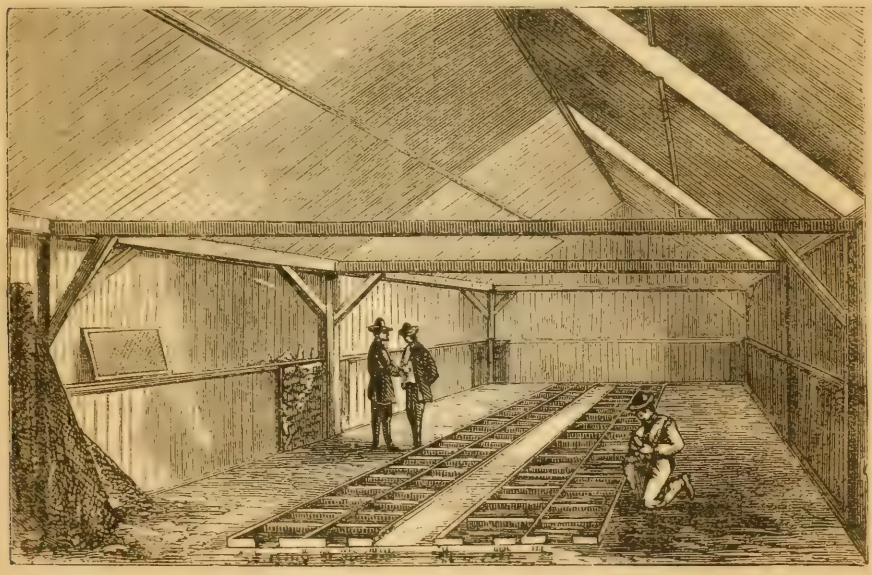
THE YOUNG TROUTS AND WHAT THEY EAT.

When first hatched, the young presented the grotesque appearance shown in the smaller figure of the cut of the trout. The ungainly abdominal appendage, technically termed the "yolk sack," is, however, gradually absorbed into the body of the young fish, the entire process requiring six weeks for its completion.

Feeding the Young Trout.

During this period the young trout requires no food, being nourished entirely by the contents of the "yolk sack;" but immediately after its absorp-

tion it is necessary that they should be regularly and carefully fed. Various substances, all of an animal nature, have been tried, but after various experiments, Dr. Slack has found the muscular fiber composing the hearts of beef cattle to be the most suitable. This is prepared by being chopped into minute fragments, which are passed through a fine wire sieve. When the fishes have attained the length of one and a half inches, the eggs of other fish are employed as food. When placed in the first pond, they will be fed entirely, for some time, upon maggots, the larvæ of the common blue-bottle fly. The appearance of these disgusting, though to the pisciculturalist useful, little animals is regarded as fixing the period at which the transfer from the hatching house to the pond should take place.



The Hatching House.

Other kinds of fish besides trout can, of course, be propagated in a similar way, but this is the most valuable in those parts of the country where, as in our Southern mountain regions, the streams are suitable and the climate sufficiently cool.

In warmer regions, such as our low and middle country, the Perch, the Bream, and what we are accustomed to call the Trout, (*Migostoma Carolinien-sis,*) the Mawmouth, etc., will perhaps be the best kinds to try.

The complicated processes of artificial impregnation may, in ordinary cases, be dispensed with, and ponds stocked by simpler means, such as gathering the spawn in natural ponds and streams, and placing it to hatch where the little fish can be protected from the devouring jaws of the big ones. This last point is an essential one, and any attempt to breed fish without separate ponds for the various sizes and kinds will be sure to result in at least a partial failure.

The Fish Ponds.

An interesting experiment, from which we may take a hint, was made in Sweden, as long ago as 1761, by Charles Frederick Lund :

"He obtained some breams, perch and mullets, with mature spawn, and placed them in large submerged or floating wooden boxes, in which he had placed quantities of pine boughs. In these boxes the fish were kept several days, until they had completed the process of spawning; they were then removed. The eggs had adhered to the boughs. These species hatch quickly, and in a short time multitudes of young fish emerged from the boughs. In this way he obtained from fifty female breams, 3,100,000 young; from one hundred female perch, 3,215,000 young; and from one hundred female mullets, 4,000,000 young."

These are wonderful results, obtained by very simple means. Those species, like the speckled trout, whose eggs fall free from each other to the bottom, cannot be managed in exactly the same way, but they may be made to spawn in places where it will be convenient to protect them from marauders by suitable enclosures; and with a suitable arrangement of small ponds and streams, the young fry of all species may be separated from the old ones that would devour them. The details of such a plan will suggest themselves, and must be modified to meet the particular conditions of each case.

HINTS.—*A succession* of fruit is to be planned for. By a proper selection, a supply may be had every day through the fruiting season. Strawberries, raspberries, currents, blackberries, grapes, etc., are rarities with farmers, rather than an essential part of their every-day food. With a climate that allows of all these to be produced with the greatest ease, how many thousands fail to enjoy them! Let us have less meat and more fruit.

Botany of the Rice Field.

In the culture of this cereal, *Oryza sativa*, the grasses and other plants which interfere with its growth are quite numerous, but the labor of cultivation may be greatly lessened by the judicious use of water for the destruction of some, alternated with the dry culture and hoeing, for destroying other kinds.

Some of these grasses having perennial roots, it is best to anticipate their spring or summer appearance, and destroy them, as far as possible, in advance of the growing crop. Among these, and one of the most troublesome, is *Zizania fluitans*, commonly known as "goose-grass," which infests fields that are low or not well drained. It is a slender grass, floating on the water, and when allowed to grow, forms a dense covering on the surface of the water and shuts out the air and light from the stalks and roots of the rice. It flowers all summer, and propagates itself rapidly both by root and seed. To get rid of it, good drainage is necessary. The trunks should be tight and the ditches clean; and the land should be well plowed and exposed to the frosts of winter; or, what is perhaps better, should be bedded up early in the winter, and kept as dry as possible. This grass belongs to the same natural family as the rice, and to the same genus as the "wild rice" of the Northern lakes, but is itself only a pest.

There is another species of this same genus, *Zizania miliacea*, which is very unlike it in appearance and habit, growing up in uncleaned ditches, and giving very little trouble anywhere else. It goes by the name of "duck oats."

Another member of this family (*Oryzeæ*) is the *Leersia oryzoides*, which, as its name implies, bears a great resemblance to rice itself, and is called by the field hands "rice-cousin." As it grows well under precisely the same conditions that favor the growth of rice, there is no other way of destroying it than by the hoe or hand.

Ceresia fluitans, (of the *Panicum* family,) known as the "water-crab," is one of the most formidable enemies which rice has to encounter. It is an annual, but seeds most abundantly; and multiplies itself also by putting out roots at the joints, as it lies on the ground when the fields are dry. When it has taken possession of a field, the hoe cannot conquer it, unless the weather be hot and dry; for, in rainy weather, the more it is cut, the more it seems to increase, every portion cut off appearing to make a new plant.

Where a field is known to be infested with it, this grass may be almost entirely destroyed by putting on the water when the grass is not more than an inch high, and keeping it on from fifteen to thirty days. This flow is called the "long point," in rice culture.

The "water-crab" seeds early in September, and then sinks in the water, leaving the rice apparently clean; but the injury done by it had been effected in July and August, while the rice was jointing and making its head. When

completely killed by the "long point," it does not make its appearance again in any quantity for several years.

Belonging to the same family is *Paspalum distichum*, or "Joint Grass;" which when allowed to get a footing in rice land, proves very troublesome. Fortunately it is not very wide-spread, at least in this district.

Panicum crus-galli, or "Red Shank," and *Panicum geniculatum*, or "Cat-tail," are very common, and require careful hoeing and picking to eradicate them. They grow equally well in the water or the dry growth.

Panicum ignoratum is a small grass whose seeds are sometimes allowed to injure the sale of clean rice. These seeds are small, nearly round, and black, and should be taken out by the screen, before the rice is sent to the mortar.

Alopecurus geniculatus (Phalarideæ) or "Foxtail," is seen here and there, generally along the margins, but gives little trouble.

Of the Cyperaceæ, the *Rhyncospora longirostris*, known as "Flaxseed," "Tick Grass," "Shiny Grass," is a pest which carries its mischief farther than any other grass. Its flat, black seed can scarcely be fanned out of the rice, and often goes to market in the barrel, greatly injuring the sale. None of this grass should be allowed to go into the barn-yard with the rice, but should be picked out of the field just before the sickle is put in.

Cyperus hydra, and *tenuiflorus*, though by no means rare, do no great harm.

Hydrocotyle umbellata, or "Button Grass," is a small weed sometimes troublesome in ill-drained black lands.

Polygonum incarnatum, and *punctatum*, are found very commonly on the margins along the banks, but are easily subdued.

There are two species of *Cassia*, one growing along the edges of the banks, the other in the fields. This latter, in some localities, threatens to prove a very formidable enemy to rice, and the greatest care should be used to extirpate it in time. It seeds most abundantly, and will not die from being pulled up, if thrown carelessly in the row, but will continue to grow and mature its seeds. It must be submerged entirely, head downward, or brought out to the banks. This plant, I think, is not a native, but was probably introduced about thirty years since.

Pontederia cordata, or "Wampee," is occasionally troublesome in lands which have been lying out, or in fields whose banks are very leaky. Deep hoeing, with the water put on soon after, will kill it out.

Scirpus quadrangulatus, or "Square Rush," will soon take possession of fields which are not cultivated, if the water is allowed to ebb and flow. If not destroyed by good plowing in the winter, this plant will almost entirely prevent the growth of the rice by its thickly matted roots.

There are some plants which are troublesome only in the ditches, in which they grow abundantly, and obstruct the free flow of the water into and out of the fields. These are *Myriophyllum verticillatum*, and *heterophyllum; Utricularia inflata; Nymphæa odorata; Villarsia lacunosa; Potamogeton fluitans, heterophyllum* and *pauciflorum;* and *Nelumbium luteum*. These, of course, are to be removed in winter by shovel and rake.

The last, but by no means the least of the enemies of the "goldseed," is volunteer rice. This is of two kinds, "Goldseed Volunteer," and "White Rice Volunteer." The former is a variety of the "Goldseed," produced by the grain which is dropped in the field in harvesting, being exposed during the winter. Every year that it is thus exposed, the inner covering of the grain becomes more highly colored (red) and adheres more tenaciously to the grain, thereby rendering necessary a greater amount of pounding, in order to get it clean. This high pounding necessary for the "Volunteer," breaks the crop rice which is in the mortar with it.

The second kind, "White Rice Volunteer," is the "volunteer" of a different species. This drops its grains as soon as they are matured, so that little of it is carried out of the field, most of it being left to injure the succeeding crop, by growing up with the "goldseed" planted, and again dropping its product as before. A. M. FORSTER, M. D.

The Value of Sorghum.

The value of sorghum as food for horses and cattle is not fully appreciated by agriculturists, especially at the South, where grasses suitable for pasturage or hay are not generally cultivated. Here in Texas it will afford a large supply of green food for stock during the entire summer; yes, a much larger supply than can be obtained from any other plant of which I have any knowledge. Its roots send up new stalks during the whole season until killed by a severe frost. Its growth is so rapid that it will give a supply of food for horses and mules during the working of corn and cotton. Both cattle and horses prefer it to any of the grasses, for its sweet juices cause them to love it. Sorghum will also afford a large yield of fodder if cut when in flower, or at any time previous, when its growth is large enough.

If sorghum could not be applied to any other uses, its cultivation would pay, and pay well; but in addition to all this, as is well known, it affords a very good molasses or syrup. According to the census report of 1860, the annual amount of sorghum molasses then made was 6,698,181 gallons, most of which was manufactured in the Northwestern States. I have seen samples of sugar made from it which were equal to the common brown cane-sugars of Louisiana; but as yet there is no well known process by which sugar can be profitabty manufactured from the sorghum.*

The report of the Iowa State Agricultural Society for 1866 contains the following method of making sugar from it, the party receiving the first premium therefor:

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* The writer is doubtless correct in saying that there is no *well known* process by which sugar can be profitably made from sorghum, as the "Southern process," we are sorry to say, is not yet well known; but, if it prove to be, what we now believe it is, an assured success, we shall do what we can to make it so.—[Ed.

"Strip and work up the cane the same day, if possible. I take the sorghum (Otahietan) when just fairly in bloom. In no case do I allow the seed to mature when I wish to make sugar; but, for No. 1 syrup, I let the seed mature. For sugar, I boil the syrup very heavily and rapidly; desiccate thoroughly and cool quickly. I use the Cook evaporator. When the syrup is reduced sufficiently, I run it through a cooler made as follows: A tin pipe, six feet long, two inches in diameter, immersed in a box of cold water; at the receiving end is a funnel turned up at right angles with the main pipe. The syrup, when passed through the pipe, is cool enough to be run into a barrel, where I leave it to granulate. Set the barrels on end, and remove the top head, and, if possible, keep the room at about 70° or 80°. When sufficiently granulated, mix a little water with the mush sugar, and drain the mush with Hunt's Centrifugal Sugar Drainer."

Yet no sugar worth mentioning has been made from sorghum in any part of the United States, at least no large amount, if any, has been offered for sale in the market.

One hundred gallons of molasses per acre is said to be a not uncommon yield. A party in Ohio reports that he realized a profit of $30 70 from one quarter of an acre of sorghum.

The Southern Sorgho Company, which has works in the vicinity of Louisville, Ky., recently report that they can make sugar from the sorghum syrup at the rate of from 5 to 7 lbs. of sugar per gallon, and a sugar equal to the best brown sugar. They have published a pamphlet on making sugar from the sorghum. They estimate the following as the product of 30 acres, viz: 22,000 lbs. of sugar and 2,045 gallons of syrup, which, valuing the sugar at 13 cts. per pound, and the syrup at 70 cts. per gallon, amounts to $4,356 50. From this deduct the cost of producing, the rent of the land, the costs of fuel, hogsheads for sugar, barrels for syrup, sheds, sugar-houses, mills, pans, boxes, troughs, etc., and wear and tear, the whole amounting to $1,812 41—this, from the total value of the sugar and syrup, leaves a profit of $2,544 09 on 30 acres of sorghum, or $84 89 per acre. In addition to this, there is the value of the seed, which is considered to be as valuable for stock feed as corn or oats. The common yield of seed per acre is from 20 to 40 bushels.

In Texas, in vicinity of Austin, two crops of sorghum, sufficiently matured for making syrup, can be made the same year from one planting. This I have done the present season. Here, as yet, only small quantities have been planted, sufficient to make molasses for home use, and feed for stock.

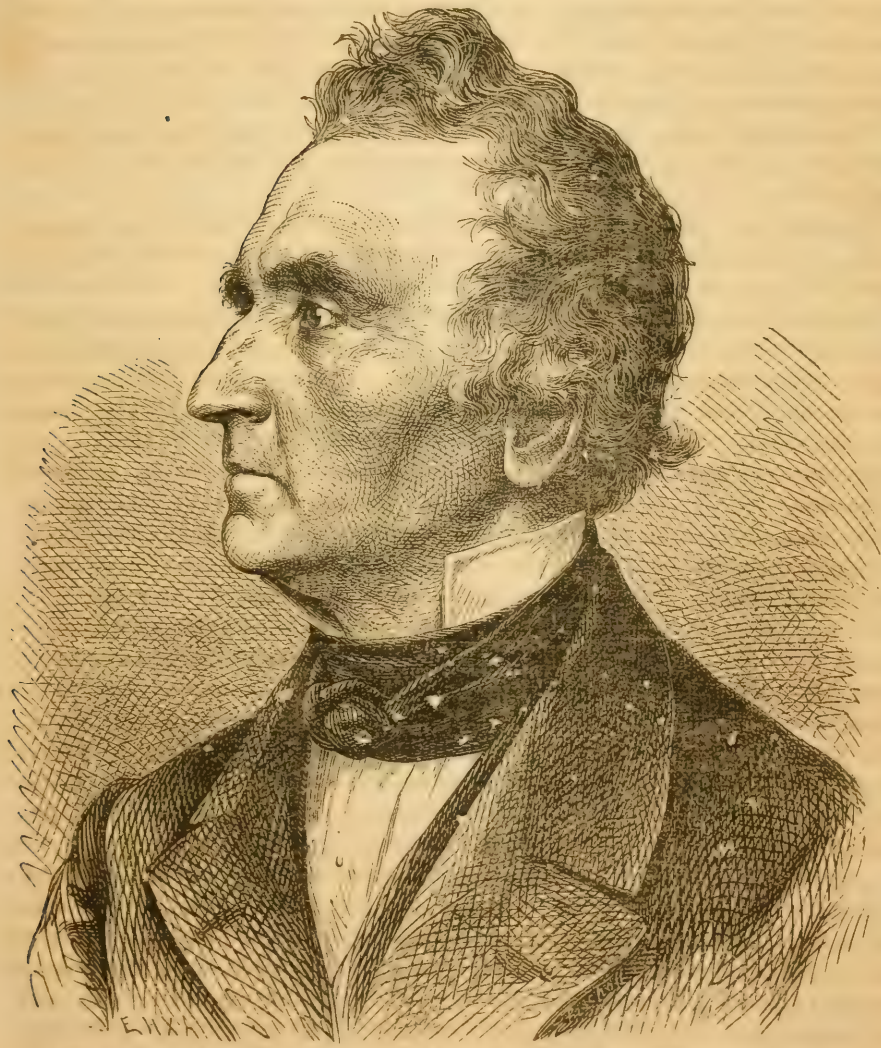
A writer lately, in the Charleston *Daily News*, dating from Greenville, S. C., states that there the making of sugar from sorghum is a complete success, but he does not give the method of manufacture. He, however, adds that it can be cheaply done and by our own farmers. If so, then we can soon raise sufficient sugar for home consumption. At the present time more than half the sugar consumed in the country is imported. The annual average for five years immediately preceding 1866 paid for imported sugar and molasses was 33,000,000 of gold dollars. The annual value of the sugar consumed is about

$60,000,000, hence we do not make half enough sugar for home use. There is no prospect of much lower prices in the sugar market. The troubles in Cuba have destroyed many sugar plantations, and greatly reduced the supply from that quarter. The use of sugar in the country is constantly increasing, and that in a greater ratio than the increase of population, owing to its greater use by the freedmen.

S. B. BUCKLEY.

Austin, Texas.

Liebig and Agricultural Chemistry.



It was Justus Von Liebig who, in the year 1836, first suggested the manufacture of what are now known as commercial manures. Farmers had been

accustomed to dress their lands with bones, but the decomposition of the material was so slow that the immediate results were far from being satisfactory, large quantities of the bone being left in the soil from year to year, having exerted no influence whatever upon the crops. The farmer was, therefore, compelled to make use of a much larger quantity than would otherwise have been necessary, in order to produce the desired effect. As plants are unable to appropriate any nourishment which is not presented to them in a state of solution, Liebig suggested that if the bones were made soluble by the aid of sulphuric acid, which would dissolve a portion of the lime, and set the phosphoric acid free, the action on the plants would be much quicker, and the expense to the farmer less. The method of dissolving bones by the aid of sulphuric acid was at the time no secret to chemists, but had been known for many years, and as the plan was very simple, and comparatively inexpensive, it was recommended by Liebig; and it is probable that no suggestion in chemical science has proved of such benefit to agriculture as this one, although so simple.

Probably the illustrious man of science had not the remotest idea what an army of speculators, traffickers and commercial adventurers would fatten and grow rich by means of his suggestion; nor could he have foreseen what immense benefits would result to the agricultural community (in spite of the frauds of dishonest manufacturers and dealers) from the use of artificial manures. Worthless mixtures may abound, but at the same time, good, conscientiously manipulated fertilizers are in the market, and farmers have evidently learned that the money expended in buying them is well invested.

Justus Liebig was born in Darmstadt, the capital of the Duchy of Hesse-Darmstadt, on the 12th of May, 1803, his parents being well-to-do citizens. His youthful education shows no such precocity as we are frequently accustomed to look for in the early life of great men. During one school inspection he sat with another boy upon the lowest bench, when the school inspector read them a severe lecture. Many years afterward Liebig accidentally met his old companion of the lowest bench in Vienna. The latter had taken an honorable position as music director, and Liebig had become the world-renowned Professor of Chemistry. "What the Councillor of the Consistory prophesied of us," said Liebig, "was not so very dangerous after all!" Of the "best," out of that school the most had become aspirants for office, merchants, mechanics; while the stone which was cast aside has become a corner-stone of humanity.

Agriculturists had learned by experience that any field can be brought to the verge of barrenness by continuous sowing and harvesting. Men sought the cause of this phenomenon in the supposition that every plant secreted matter in its roots which, while disadvantageous to itself, could be useful to another; wherewith the visible results of the changing of crops were brought in connection. But this view could not be the correct one, for the same plants have grown on the prairies and on the pampas, in the same situation, and with like luxuriance, for thousands of years; and the only difference

between them and the arable field and meadow of the farmer is this, that while on the prairies the harvest is never gathered, in the other it is reaped every year. And with this gathering of the harvest must necessarily be taken away matter which can never be restored. In this way Liebig finally arrived at the grand conclusion which forms the palpable foundation of the new agriculture—that the ash-constituents of the plant belong to the life of the plant; that plants without a certain amount of this non-volatile substance cannot possibly be developed.

This simple sentence, which is now comprehensible wherever it is uttered, every intelligent farmer carries on his tongue, and makes it the rule of his actions. This sentence has, therefore, become weighty, because it is indispensable in its assistance to man in the production of plants. While the volatile elements of plants are carried off by the wind into every quarter of the globe, and are thus accessible from the summit of the Himalays to the depths of the sea, from the luxuriant coasts of Ceylon and Amboyna to the uttermost point of Spitzbergen, the fire proof, clod-clinging, ashen-constituent, which is only moved the width of a blade of straw in a year, becomes surely and regularly distributed again in the earth, but yet contains no substitution for the portion which is gone away. As soon as this theory was recognized, practical science took on a different aspect. Man could and must direct his whole energy to the restoring of this material necessarily withdrawn by agriculture from the soil. It is true that people had earlier recognized by experience the usefulness and necessity of manures, and in all times they had used the refuse of life wherever it could be rendered serviceable, and not being otherwise available, for this purpose; but it was not known what substances were thus returned to the soil in this refuse, nor was it a matter of consideration that it should give adequate compensation for what had been taken away in fruit and animals sold. *

The first great application which Liebig made of these facts was to prove how even fruitful fields must become impoverished and barren by the mere making use of their own manures, as is usually done in agriculture.

The indispensable ashen-constituents of plants are, "first, a certain quantity of sulphate, gypsum, to give to the albumen the necessary amount of sulphur of which it is ever in need; then phosphoric acid, which must be contained as phosphate of lime in every plant-growing soil, and a certain quantity of potash, which is contained in the ashes of all plants. These are the substances which, in the natural course of things, would return to the soil, but which, by modern agriculture, are now taken elsewhere. Science comes to the aid of the farmer. She examines the rocks, the stones, the refuse of industry, for these materials, and offers them properly prepared to his hand. The distant coasts of the still sea are explored, and treasures of infinite value which lay for thousands of years, accumulating and useless, are brought into commerce, and are now producing life." †

* From the German of Frederick Mohr, by John P. Jackson, in *American Phrenological Journal.* † Mohr.

An Experiment with Fertilizers.

Several of the popular commercial fertilizers of the day were applied this year in juxtaposition in order to test their comparative merits on the same kind of land. The soil where used was thin from long tillage, of gray complexion, with red-clay subsoil, all apparently of identical texture, and having, originally, oak and hickory growth, interspersed with pine. It was opened on the 29th of March, with a shovel plow, five or six inches deep, at three feet intervals, and the fertilizer at the rate of 307 lbs. per acre, equally distributed in the furrow, and bedded over with a Brinly plow. On the 19th of April, the beds were opened with a scooter, (small bull-tongue,) the seed from eight to ten dropped at fifteen inches distances, and covered with a board; the planting followed at night, auspiciously, by a fine rain. The cultivation, similar to the rest of the crop, was performed exclusively with the sweep and the hoe—each of which, from the scarcity of hands, was used but three times. The first working was done on the 12th of May, and the last on the 30th of July. The spring was cold, and nothing grew off vigorously. There were occasional light showers during May, followed by high winds, forming a crust on the surface. From the 1st of June, when there was a heavy thunder and rain storm, to the 27th of July, when there was another soaking rain, there were only a few showers, with an interval of intense heat, the thermometer exhibiting 100° of Fahrenheit on the 11th and 14th days of July, and for three weeks ranging from 88° to 98°. A similar spell of heat, in slightly less degree, occurred in August. The following is a list of fertilizers used, in the order planted from east to west, the rows running north and south:

1. Dickson compound.
2. J. T. Gardiner's manipulated.
3. Patapsco.
4. Nothing whatever.
5. J————.
6. Baugh's raw bone.
7. Peruvian Guano.
8. Wilcox & Gibb's manipulated.

The "stand" was not what was expected. By tedious, but accurate count of all the stalks, it was ascertained that the average distances, instead of being fifteen inches in all of them, ranged from twenty-four to twenty-eight inches—the Patapsco having the greatest, and the Baugh the least distance—the other being intermediate. The Dickson had the advantage of six feet to the eastward, when there was an experimental acre of cotton, planted in holes, at six feet each way. The Wilcox & Gibbs, on the west, adjoined a portion of the main crop, drilled with the same interval of three feet.

On the 24th of June, the first bloom was observed on the Gardiner tract,

and the next, on the 26th, on that of the Wilcox & Gibbs. At that time the "weed" of the Gardiner cotton was the largest, the Dickson next, the Peruvian Guano third, and the greenest in color then and throughout the season.

The first open bolls were seen on the 11th of August, simultaneously on the Gardiner and the Dickson. The others followed in a few days, as did the cotton elsewhere on the place. The first and second "pickings" were made on the 25th of August and the 8th of September. The third picking on the 20th of September, the fourth on the 2d of October, the fifth on the 29th of October, and the sixth and final picking on the 26th of November. The fourth and fifth pickings are united to economize space:

	1st.	*2d.*	*3d.*	*4th & 5th.*	*6th.*	*Total crop.*
1. Dickson	291 lbs. p. a.	167 lbs. p. a.	490 lbs. p. a.	185 lbs. p. a.	125 lbs. p. a.	1,258 lbs.
2. Gardiner	315 "	200 "	491 "	184 "	82 "	1,278 "
3. Patapsco	261 "	167 "	370 "	173 "	87 "	1,058 "
4. Nothing	62 "	82 "	154 "	123 "	60 "	481 "
5. J———	116 "	116 "	193 "	174 "	77 "	676 "
6. Baugh	198 "	199 "	381 "	139 "	89 "	1,012 "
7. Peruv. Guano	197 "	199 "	375 "	139 "	89 "	999 "
8. Wilcox & Gibbs	200 "	160 "	361 "	167 "	100 "	988 "

The above exhibits the essential points of the experiment. While showing the great advantages of all the fertilizers used, and indicating which were most productive this year on this land, the experiment is by no means conclusive of their comparative merits. The season and the cultivation were alike with all—likewise the preparation of the land, the quantity of manure, the quantity of seed, the seeds themselves, and the manner of planting, but the deficiency in the soil of certain elements of plant-nutriment must be considered. Continued production of corn, wheat or cotton, for many years, with only partial returns in the form of manures, has abstracted largely from the fertility of the land, as fully exhibited in the tract where nothing has been applied.

In the same field last year with a better season, within a few hundred yards of the locality now used, the following result was shown:

SEED COTTON PER ACRE.

No manure	881 lbs.
Peruvian Guano	1,328 "
Baugh's raw bone	1,489 "

Here the no manure doubled the yield of this crop—the Baugh in both instances surpassed the Peruvian Guano, while now the Gardiner, the Dickson and the Patapsco all exceeded the production of both these favorite fertilizers.

M. C. M. HAMMOND.

Beech Island, S. C.

A SMALL, moderate size tree at the transplanting will usually be a large bearing tree sooner than a larger tree set out at the same time, and which is necessarily checked in growth by removal.

Facts and Figures for Farmers.

This article, like a dictionary, may prove rather dull reading, but, like the dictionary, again, it will prove very useful for reference, and we doubt whether any other paper in this number possesses greater value. The tables are compiled from the best authorities, but they may not be entirely free from error. If any one should discover errors we shall be pleased to have them pointed out.

DATA IN MECHANICS AND RURAL ECONOMY.

In plane earth excavations, one man ought to execute each day, ten cubic yards, with spade and wheelbarrow, depositing the dirt at any distance within 120 feet.

One man can cut two cords of pine wood per day; from one cord to one cord and a half, according to the character of the growth, is a good task.

A mason can lay 1,000 bricks per day; one hand attends two.

A pair of sawyers ought to cut 900 superficial feet per week, of pine timber, when the hewing has been previously done, or 600 feet with the hewing.

A man or boy with a good horse and plow, ought to plow about 1½ acre per day, flush, for if he work ten hours, and cut and turn a furrow nine inches wide, he will be required to walk at the rate of three miles per hour to accomplish his task.

Having given the width of furrow slice cut by any plow, the number of hours at work, and the rate at which the team travels per hour, the surface that such plow and team can plow per day, may be calculated after the manner of the above example.

N. B.—In the above example, the acre is assumed to be seventy yards square. An ox team will travel twenty miles a day, and hence may be calculated the quantity of hauling which ought to be done at any given distance, making the proper allowance for the time necessary to load.

A horse team will travel twenty-five miles a day.

A good 4-horse team, on a common road, will haul two cubic yards of stone at three loads.

One gallon, or even 1-10 of a bushel of clover seed to the acre, is a sufficient seeding.

One bushel of ground plaster or gypsum per acre, a sufficient application on clover or other grasses.

MEASURING LAND.

Almost every farmer has some way of measuring land, and the most common is to step off five paces for a rod, and call sixty by sixty-five paces an acre. For common purposes this mode will answer very well, but when the exact measurement of a piece of land is desired, it cannot be depended upon as being at all accurate.

When a field has once been measured correctly a man knows exactly how much seed will be required to put it to grain, and also the exact yield per acre of any crop he may see fit to put upon it.

A light pole just sixteen and a half feet long, is a cheap and convenient measure, but a four-rod tape line is much better.

An exact acre can be found by the following table of distances:

A plot of ground		5	yards	wide	by	968	yards	long,	contains	1 acre.
"	"	10	"	"		484	"	"	"	"
"	"	20	"	"		242	"	"	"	"
"	"	40	"	"		121	"	"	"	"
"	"	80	"	"		60½	"	"	"	"
"	"	70	"	"		69 1-7	"	"	"	"
"	"	220	feet	wide,	by	198	feet	wide,	"	"
"	"	440	"	"		99	"	"	"	"
"	"	110	"	"		369	"	"	"	"
"	"	60	"	"		726	"	"	"	"
"	"	120	"	"		363	"	"	"	"
"	"	240	"	"		181½	"	"	"	"

ONE ACRE CONTAINS

160 square rods; 4,840 square yards; 43,560 square feet.

ONE ROD CONTAINS

30.25 square yards; 272.25 square feet.

One square yard contains nine square feet.

THE SIDE OF A SQUARE TO CONTAIN

One acre	208.71	feet	12.65	rods	64	paces.
" half acre	147.58	"	8.94	"	45	"
" third acre	120.50	"	7.30	"	37	"
" fourth "	104.36	"	6.32	"	32	"
" eighth "	73.79	"	4.47	"	22½	"

DISTANCES FOR PLANTING TREES, ETC.

Apples, standard, 25 to 33 feet; apples, dwarf, 5 to 8 feet; pears, standard, 20 feet; pears, dwarf, 8 to 10 feet; peaches, headed back, 12 feet; cherries, standard, 20 feet; cherries, dwarf, 8 to 10 feet; plums, standard, 15 feet; plums, dwarf, 8 to 10 feet; quinces, 6 to 8 feet; grapes, 10 to 12 feet; gooseberries and currants, 4 feet; raspberries, 4 feet; blackberries, 6 to 8 feet; strawberries, 2 feet by 15 inches.

For the above distances, the following is the number of trees required for an acre:

One foot by 1.3, 17,424 plants; at 4 feet apart each way, 2,720 trees; at 5 feet apart each way, 1,742 trees; at 6 feet apart each way, 1,200 trees; at 8 feet apart each way, 680 trees; at 10 feet apart each way, 430 trees; at 12 feet apart each way, 325 trees; at 15 feet apart each way, 200 trees; at 18 feet apart each way, 135 trees; at 20 feet apart each way, 110 trees; at 25 feet each way, 70 trees; at 30 feet apart each way, 50 trees; at 33 feet apart each way, 40 trees.

QUANTITY OF SEED REQUIRED FOR AN ACRE.

Wheat, 1½ to 2 bushels; rye, 1½ bushels; oats, 3 bushels; barley, 2 bushels; peas, 2 to 3 bushels; white beans, 1½ bushels; buckwheat, ½ bushel; corn, broadcast, for fodder, 4 bushels; corn, in drills, for fodder, 2 to 3 bushels; corn, in hills, 4 to 8 quarts; broom corn, ½ bushel; potatoes 10 to 15 bushels; beets, 3 lbs.; carrots, 2 lbs.; ruta-baga, ¾ lb.; millet, ¼ bushel; clover, white, 4 quarts; clover, red, 8 quarts; Timothy, 6 quarts; orchard grass, 2 bushels; red top, 1 to 2 pecks; Kentucky blue grass, 2 bushels; mixed lawn grass, 1 to 2 bushels; tobacco, 2 ounces.

QUANTITY OF GARDEN SEEDS TO PLANT.

Asparagus.—One ounce produces 1,000 plants; requires a seed-bed of about 12 feet.

Asparagus Roots.—1,000 plants, bed 4 feet wide and 225 feet long.

Beans.—One quart plants from 100 to 150 feet of row, or 150 to 200 hills.

Beets.—One ounce plants, 150 feet of row.

Broccoli.—One ounce gives 2,500 or 3,000 plants; requiring 40 square feet of ground.

Brussels' Sprouts.—Same as broccoli.

Cabbage.—Early sorts, the same as broccoli; the later require 60 feet of ground.

Cauliflower.—The same as late cabbage.

Carrot.—Three or four pounds to the acre; one ounce to 150 feet of row.

Celery.—One ounce gives 7,000 or 8,000 plants; requiring 80 feet of ground.

Cucumber.—One ounce for 150 hills.

Cress.—One ounce sows bed 16 feet square.

Egg Plant.—One ounce gives 2,000 plants.

Endive.—One ounce gives 3,500 plants; requiring 80 feet of ground.

Kale.—Same as broccoli.

Leek.—One ounce gives 2,000 plants; requiring 60 feet of ground.

Lettuce.—One ounce gives 7,000 plants; requiring seed-bed of 120 feet.

Melon.—One ounce for 120 hills.

Nasturtions.—One ounce sows 25 feet of row.

Onion.—Four or five lbs. to the acre; one ounce of seed sows 200 feet of row.

Okra.—One ounce sows 200 feet of row.

Parsley.—One ounce sows 200 feet of row.

Parsnip.—One ounce sows 250 feet of row.

Peppers.—One ounce gives 2,500 plants.

Peas.—One quart of smaller sorts sows 120 feet of row; of larger, 200 feet of row.

Radish.—One ounce to 100 feet.

Salsify.—One ounce to 150 feet of row.

VALUE OF FOOD FOR DOMESTIC ANIMALS.

The figures giving the number of pounds of any one substance to be equal to the quantity given of any other—the results of experiments:

Good hay, 100 lbs.; good clover hay, 95 lbs.; rye straw, 355 lbs.; oat straw; 220 lbs.; potatoes, 195 lbs.; carrots, 280 lbs.; beets, 346 lbs.; ruta-bagas, 262 lbs.; wheat, 43 lbs.; peas, 44 lbs.; beans, 46 lbs.; rye, 49 lbs.; barley, 51 lbs.; Indian corn, 56 lbs.; oats, 59 lbs.; buckwheat, 64 lbs.; oil cake, 64 lbs.

WEIGHT OF GRAIN.

Wheat is 60 lbs. to the bushel in all the States, except Connecticut, where it is 56 lbs.; rye is 56 lbs. in nearly all the States; corn, 56 in nearly all, but 58 in New York; oats, 32 lbs.; barley, 48 lbs.; buckwheat, 46 to 50, but mostly 48 lbs.; clover seed, mostly 60 lbs., but 64 in Ohio and New Jersey; Timothy, 44 lbs.; flaxseed, 56 lbs.; potatoes, 60 lbs.; beans, mostly 60, but 62 in New York, and 56 in Ohio; blue grass seed, 14 lbs.; hemp seed, 44 lbs.; dried peaches, 28 to 33 lbs.; dried apples, 22 to 28 lbs.

CONSUMPTION OF HAY.

The hay consumed by different animals does not vary greatly from 3 lbs. daily for each hundred pounds of the animals. The following table is the result of various experiments, by different persons, and will be useful for farmers who wish to determine by calculation, beforehand, how their hay will hold out for the winter, 500 cubic feet of Timothy hay, in a full bay, being about one ton:

Working horses, 3.08 lbs.; working oxen, 2.40 lbs.; milch cows, (Boussingault's,) 2.25 lbs.; milch cows, (Lincoln's,) 2.40 lbs.; young growing cattle, 3.08 lbs.; steers, 2.84 lbs.; dry cows, 2.42 lbs.; pigs, (estimated,) 3.00 lbs.; sheep, 3.00 lbs.

TO MEASURE GRAIN IN THE GRANARY.

Divide the cubic feet by 56, and multiply by 45, and the result will be struck measure.

TO MEASURE CORN IN THE CRIB.

Multiply the length, breadth and height together, in feet, to obtain the cubic feet; multiply this product by 4, and strike off the right figure, and the result will be shelled bushels, nearly.

UNITED STATES BUSHEL AND GALLON.

The United States bushel is 2,150.40 cubic inches.

The gallon 231 cubic inches.

The dry measure gallon, or one-eighth of the bushel, is 268.8 cubic inches.

WEIGHTS OF A CUBIC FOOT.

Of various substances, from which the bulk of a load of one ton may be easily calculated:

Cast-iron, 450 lbs.; water, 62 lbs.; white pine, seasoned, about 30 lbs.; white oak, seasoned, about 52 lbs.; loose earth, about 95 lbs.; common soil, compact, about 124 lbs.; clay, about 135 lbs.; clay, with stones, about 160 lbs.; brick, about 125 lbs.

BULK OF A TON OF DIFFERENT SUBSTANCES.

23 cubic feet of sand, 18 cubic feet of earth, or 17 cubic feet of clay make a ton ; 18 cubic feet of gravel, or earth, before digging, make 27 cubic feet when dug, or the bulk is increased as three to two.

EXTEMPORE MEASURES.

A box 4×4 inches square, 3.6 inches deep, will hold one wine quart, 57.75 (—0.15) cubic inches.

A box 5×5 inches square, 4.6 inches deep, will contain half a wine gallon, 115.5 (—0.5) cubic inches.

A box 24×16 inches, 28 inches deep, will contain one barrel, (large whiskey barrel,) 10.752 cubic inches.

A box 8×8 inches square, 8.4 inches deep, will contain a peck, 537.6 cubic inches.

A box 16×16.8 inches, and 8 inches deep, will contain one bushel, 2,150 (0.42) cubic inches.

The above measurements are given in the army regulations, and many more might be easily added, it being simply necessary to find three numbers which, when multiplied together, will give as a "product" the number of cubic inches required for any desired measure. The dimensions should be such that a box made in accordance with them will be of a convenient form.

A wine gallon contains 231 cubic inches; hence a box 22×21 inches will contain one wine gallon for each inch of depth, and may be made as deep as is desirable.

Any one able to use a saw, hammer and plane, and square, with some good, clear, white pine inch-boards, may easily make such boxes. If they are found to hold too much, their capacity may be reduced by planing off the top, or by cutting a piece of wood, containing exactly the number of square inches which the measurement shows to be in excess, and nailing it inside, but against one side.

HOUSEHOLD WEIGHTS AND MEASURES.

Wheat flour, 1 pound is 1 quart.
Indian meal, 1 pound 2 ounces is 1 quart.
Butter, when soft, 1 pound 1 ounce is 1 quart.
Loaf sugar, broken, 1 pound is 1 quart.
White sugar, powdered, 1 pound 1 ounce is 1 quart.
Best brown sugar, 1 pound 2 ounces is 1 quart.
Eggs, average size, 10 are 1 pound.

LIQUID MEASURE.

Sixteen tablespoonsful are half a pint.
Eight tablespoonsful are 1 gill.
Four tablespoonsful are half a gill.
A common sized tumbler holds half a pint.
A common size wineglass holds half a gill.

Table showing the number of spaces contained in an acre of land at various given distances, which will be found useful in fixing the proper distances, to place Marl, Lime or other Manures, so as to give any desired quantity to the acre.

FEET.	FEET.	SPACES.	FEET.	FEET.	SPACES.	FEET.	FEET.	SPACES.
40 by	40	27	19 by	18	127	16 by	13	209
39 "	39	28	19 "	17	134	16 "	12	226
38 "	38	30	19 "	16	143	16 "	11	247
37 "	37	31	19 "	15	152	16 "	10	272
36 "	36	33	19 "	14	163			
35 "	35	35	19 "	13	176	15 "	15	193
34 "	34	37	19 "	12	191	15 "	14	207
33 "	33	40	19 "	11	208	15 "	13	223
32 "	32	42	19 "	10	229	15 "	12	242
31 "	31	45				15 "	11	264
30 "	30	48	18 "	18	134	15 "	10	290
29 "	29	51	18 "	17	142			
28 "	28	55	18 "	16	151	14 "	14	222
27 "	27	59	18 "	15	161	14 "	13	239
26 "	26	64	18 "	14	172	14 "	12	259
25 "	25	69	18 "	13	186	14 "	11	282
24 "	24	75	18 "	12	201	14 "	10	311
23 "	23	82	18 "	11	220			
22 "	22	90	18 "	10	242	13 "	13	257
21 "	21	98				13 "	12	279
20 "	20	108	17 "	17	150	13 "	11	304
20 "	19	114	17 "	16	160	13 "	10	335
20 "	18	121	17 "	15	170			
20 "	17	128	17 "	14	180	12 "	12	302
20 "	16	136	17 "	13	197	12 "	11	330
20 "	15	145	17 "	12	213	12 "	10	363
20 "	14	155	17 "	11	232			
20 "	13	167	17 "	10	256	11 "	11	360
20 "	12	181				11 "	10	396
20 "	11	198	16 "	16	170			
20 "	10	217	16 "	15	181	10 "	10	435
19 "	19	120	16 "	14	194			

Mineral constituents absorbed or removed from an acre of soil by several crops. (Johnson.)

	Wheat. 25 bushels. Lbs.	Barley. 40 bushels. Lbs.	Turnips. 20 tons. Lbs.	Hay. 15 tons. Lbs.
Potassa	29.6	17.5	47.1	38.2
Soda	3.	5.2	8.2	12.
Lime	12.9	17.	29.9	44.5
Magnesia	10.6	9.2	19.7	7.1
Oxide of Iron	2.6	2.1	7.1	.6
Phosphoric acid	20.6	25.8	46.3	15.1
Sulphuric acid	10.6	2.7	13.3	9.2
Chlorine	2.	16.	3.6	4.1
Silica	118.1	129.5	247.8	78.2
Alumina	—	2.4	—	—
Total	210	213	423	209

Table of results for different distances in planting.

Hills. No.	Dis. in. apart.	Stalks per hill.	Sq. in. to each stalk.	Stalks per acre.	Bushels per acre with one ear to each stalk. One small ear.	One med. ear.	One large ear.
1	24	3	192	32,670	109	182	255
2	24	4	144	43,560	145	243	341
3	30	3	300	20,908	70	116	162
4	36	3	432	14,520	48	81	114
5	36	4	324	19,360	64	108	151
6	42	4	441	14,223	47	79	111
7	48	4	576	10,890	36	60	85
8	48	1	2,340	2,722	9	15	21
Drills. No.		Stalks in. apart.					
8	24	6	144	43,560	145	243	341
9	24	12	288	21,780	72	121	170
10	30	6	180	34,848	116	194	272
11	30	9	270	23,232	77	129	181
12	30	12	360	17,424	58	97	136
13	36	6	216	29,040	97	162	226
14	36	8	288	21,780	72	121	170
15	36	9	324	19,360	64	108	151
16	36	12	432	14,520	48	81	114
17	40	4	160	39,204	131	218	305
18	40	6	240	26,136	87	145	204
19	40	8	320	19,602	65	109	153
20	40	9	360	17,424	58	97	136
21	48	12	576	10,890	36	60	85

Divisions of the compound substances of the cultivated crops of vegetables.

Vegetable.	Saccharine or Sugary. Per cent.	Oleaginous or Oily. Per cent.	Albuminous or Fleshy. Per cent.	Sulphur, Phosphorus, Iron, etc. Per cent.
Wheat flour*	55	2½	10 to 19	20 to 30
Barley	60	2.4	12 " 15	30
Oats	60	5½	14 " 19	40
Rye	60	—	—	—
Corn	70	5½	12	15
Rice	75	—	7	—
Beans	40	2.4	24 to 28	30
Peas	50	2.4	24	30
Potatoes	18	.2	2	8 to 15
Mangel Wurzel	11	—	2	—
Turnips	9	.2	1½	5 to 8
Bran	—	3½	16	—
Wheat straw	—	2.4	—	50
Oat "	—	.4	—	60
Clover hay	—	3.4	—	90

* 100 lbs. of wheat flour contains fine flour, 40 per cent.. common flour, 80 per cent., midlings, 10 per cent., blue flour, 5 per cent., bran, 25 per cent.

Table showing the Period of Reproduction and Gestation in Domestic Animals.

KINDS OF ANIMALS.	Proper age for reproduction.	Period of the power of reproduction.	Number of females for one male.	Period of gestation and incubation.		
				Shortest period.	Mean period.	Longest period.
		YEARS.	.....	DAYS.	DAYS.	DAYS.
Mare	4 years	10 to 12	.....	322	347	419
Stallion	5 "	12 to 15	20 to 30	.....	.....	.....
Cow	3 "	10 to 14	.....	240	283	321
Bull	3 "	8 to 10	30 to 40	.....	.....	.....
Ewe	2 "	6	.....	146	154	161
Tup	2 "	7	40 to 50	.....	.....	.....
Sow	1 "	6	.....	109	115	143
Boar	1 "	6	6 to 10	.....	.....	.....
She Goat	2 "	6	.....	150	156	163
He Goat	2 "	5	20 to 40	.....	.....	.....
She Ass	4 "	10 to 12	.....	365	380	391
He Ass	5 "	12 to 15	.....	.....	.....	.....
She Buffalo	.....	.....	.....	281	308	335
Bitch	2 "	8 to 9	.....	55	60	63
Dog	2 "	8 to 9	.....	.....	.....	.....
She Cat	1 "	5 to 6	.....	48	50	56
He Cat	1 "	9 to 10	5 to 6	.....	.....	.....
Doe Rabbit	6 mos.	5 to 6	.....	20	28	35
Buck Rabbit	6 "	5 to 6	30	.....	.....	.....
Cock	6 "	5 to 6	12 to 15	.....	.....	.....

TABLE FOR BEST TIME TO SOW SEED.

Vegetable Seeds that may be sown in the latitude of Charleston from the first of January to the end of February, Thermometer in the shade averaging 45 degrees.—Beet, carrot, cress, celery, cabbage, cauliflower, endive, English or Windsor beans, kale, Irish potatoes, lettuce, mustard, parsley, parsnip, onions, peas radish, turnip, spinach, sugar corn, Swiss chard.

Vegetable Seeds that may be sown in the open ground in the latitude of Charleston from the first of March to the end of April, Thermometer in the shade averaging 60 degrees.—Lima beans, bush beans, cranberry, pole beans, scarlet runner beans, sugar corn, musk melon, mango, balsam apple, okra, water melon, tanyah, squash, pumpkin, tomato, nasturtium, cucumber, egg plant, sweet potatoes.

It will be understood that these dates refer only to this latitude. Farther South, operations should be begun earlier; farther North, later.

Nutritious Properties of different Vegetables and Oil Cake, compared with each other in quantities.—Oil cake, 1; peas and beans, 1.5; rice, 1.6; wheat, grain, 2.5; wheat flour, 2; oats, 2.5; rye, 2.5; bran, wheat, 2.75 and 3; corn, 3; barley, 3; pea straw, 3; clover hay, 4; hay, 5; potatoes, 14; old potatoes, 20; carrots, 17.5; cabbages, 18; wheat straw, 26; barley, 26; oat, 27.5; turnips, 30.

Illustration.—1 lb. of oil cake is equal to 18 lbs. of cabbage.

YIELD OF OIL FROM SEVERAL SEEDS.

Poppy, 56 to 63 per cent.; cress, 56 to 58; castor, 25; sunflower, 15; hemp, 14 to 25; linseed, 11 to 22.

Average quantity of Tannin in several substances, (Morfit.)—Catechu Bombay, 55 per cent.; catechu Bengal, 44; kino, 75; nutgalls Aleppo, 65; nutgalls Chinese, 69; oak, old, inner bark, 14.2; oak, young, inner bark, 15.2; oak, young, entire bark, 6; oak, young, spring cut bark, 22; oak, young, root bark, 8.9; chestnut, American rose, bark, 8; chestnut, horse rose, 2; sassafras root bark, 58; sumac, Sicily and Malaga, 16; sumac, Virginia, 10; sumac, Carolina, 5; willow, inner bark, 16; willow, weeping, 16; sycamore bark, 16; tan shrub bark, 13; cherry tree, 24; tormentil root, 46; corneus sanguinea, 44; alder bark, 36.

PERIODS OF INCUBATION OF DOMESTIC POULTRY.

The "*mystical numeral*" seven has been held to have some wonderful influence over the eggs of birds, and because there are seven days in the week, "seven last plagues," "seven phials of wrath," seven stars in the Pleiades, and seven of a great many other things, it has been harped upon as most astonishing that birds should regulate their time of sitting, or eggs of hatching, by sevens also. Thus, the hen sits 3 times 7 days, the goose 4 times 7, the duck 5 times 7, and so on. The wonder ceases when we know the actual number of days required for the incubation of fresh eggs, which is as follows:

Pigeons sit	18 days.	Musk ducks sit	36 days.
Hens "	21 "	Pea fowls "	28 "
Guinea hens sit	25 "	Geese "	29 "
Turkeys "	26 "	Ducks "	26 to 33 "
Swans "			6 to 8 weeks.

FACTS ABOUT WEEDS.

Dr. Lindley estimates as a low average the following number of seeds from each of these four plants:

1 plant of	Groundsel produces	2,080	16,360 plants,
1 "	Dandelion "	2,740	
1 "	Sow Thistle "	11,040	
1 "	Spurge "	540	

or enough seed from these four plants to cover three acres and a half, at three feet apart. To hoe this land, he says, will cost 6*s.* (sterling) per acre, and hence a man throws away 5*s.* 3*d.* a time, as often as he neglects to bend his back to pull up a young weed before it begins to fulfil the first law of nature. He recommends every farmer, whose vertebral column will not bend, to count the number of dandelions, sow thistles, etc., on the first square rod he can measure off.

This operation may be repeated in this country by applying all the above estimates to crab grass, burdock, fox-tail, chick-weed and purslane.

CHEESE FACTORIES IN NORTH CAROLINA.—Mr. Gatchell writes to the New York Farmers' Club: "This was made for a grazing and fruit-growing country, and several cheese factories that have been running for the last year or two, and proved complete successes, have demonstrated the fact that cheese making will be one of the chief industries of this region."

The Agricultural School of Moscow, with some Remarks on the Agriculture of Russia.

This new and flourishing institution, called in Russia the Agricultural and Forest Academy of Petroskoé Razoumouskoé, was planned in 1857 by Mouravief, Minister of the State's Domain, and afterwards Governor-General of the Polish Provinces. Its site is a magnificent estate, distant about nine miles to the northeast of Moscow. Before the time of Peter the Great, it belonged to the Narishkin family; but in 1763 became the property of Count Razoumousky, the favorite of the Empress Elizabeth. Of late, however, it fell into the hands of the apothecary Shutz, from whom it was purchased by the government for the use of the school, at the sum of 250,000 rubles.*

The entire tract consists of 714 desiartins, (the desiartin being 2.86 acres English.) Its surface, like that of central Russia generally, is nearly as level as the prairies of Illinois, but nevertheless, highly picturesque, through the intermingling of woods, open fields, gardens and lakes. The proportions in which these exist respectively, are as follows: 216 desiartins in forest, (fir, oak and birch,) 126 in arable fields, 68 in meadows, 63 in gardens and nurseries and 22 in water.

The buildings, which are numerous and striking in their architecture, are mostly grouped into a compact village, of which the main edifice devoted to instruction, and the church, present the most attractive appearance. The former of these has been lately erected under the supervision of a distinguished architect of St. Petersburg, and fairly deserves to be called a palace; though all its details have been wisely arranged to meet the wants of the institution. It embraces the most spacious apartments for instruction, inclusive of elegant rooms for the physical apparatus and collections in natural history. The laboratory occupies a separate building, in another quarter of the village. The amount expended in putting up new buildings and renovating such as previously existed, was 757,000 rubles,—thus making the outlay for land and buildings together, rather over a million of our money. The annual expenses of the institution are now liberally met by the nation, with whom it is an object of peculiar favor. Troops of visitors are drawn to it almost daily,—the ride, whether by omnibus or drosky, being a delightful one, over a smooth and perfectly straight road, which, for the last few miles, traverses an almost unbroken forest of birches and pines. The flower gardens, immediately adjoining the main edifice on one side, with the park and lake on the other, are peculiarly attractive. Indeed they are not surpassed by the royal gardens at Peterhof in the variety of their productions, or the order in which they are kept. The view of them from the second story of the building above mentioned, is so pleasing as well to justify the exclamation of an eminent French savant, that were he a pupil there, he feared he should do little else than admire.

* The par value, in English money, of the *ruble* is 38 3-64d, or about the present value of the American paper dollar.

I was no less surprised with the extent and perfection of the physical apparatus, never having seen it surpassed in any public institution of our country. The mineralogical museum in particular attracted my attention. It had been chiefly formed by the well known geologist, Prof. Auerbach, (lately deceased,) and by him donated, together with his large cabinet of meteorites, to the institution in which he was the first professor in these branches. Of the laboratory I cannot speak, as I had not time for its inspection.

From Prof. Trautscholdt, the successor of Auerbach, and who is widely known as one of the best geologists of Russia, I learned several particulars respecting the studies of the school. They embrace the following departments: zoology, physiology, botany, geology and mineralogy, physics, (natural philosophy,) chemistry, technology, geodosy, architecture, agriculture, engineering, political economy, veterinary art, breeding of cattle, preservation of forests, religion. The present number of professors is sixteen; among whom are names of considerable eminence, as that of Jelernof, the head director or president, of Jzwetkoff, the professor of physics, of Trautscholdt, (formerly a pupil of Liebig,) the professor of geology and mineralogy, and of Bekoit, the professor of architecture.

The number of students is three hundred, who, judging from those I saw, are made up of young men rather than of lads. They correspond in maturity to our professional students,—having previously passed through the gymnasia as a preparation for entrance to the agricultural school. Their farther instruction, therefore, partakes of the character of the university courses in Europe; and appears to have for its object a qualification for the management of large estates, and for government offices, whose duties relate to agriculture in its widest sense.

In addition to the foregoing, the school contemplates the carrying on of difficult investigations pertaining to agriculture, which being conducted by men of ability in each department, and furnished with every facility of modern science, afford the most rational prospect of success. In an institution of this extent, where the time and means for experiment also are fully allowed, valuable discoveries are sure to be made.

As the school commenced its operations only in November, 1865, the farm cannot be supposed to be fully under cultivation, or very thoroughly stocked with animals. Nevertheless, I observed extensive grain fields, well-filled barns and herds of handsome cattle, among which the English breeds appeared to have the preference.

The number of hands employed was about sixty, of whom upwards of forty were occupied with the care of the gardens and nurseries. The horned cattle were forty-five, the horses six in number.

The system of rotation agreed upon is the following: 1st year, fallow; 2d, rye; 3d, clover; 4th, clover; 5th, potato; 6th, oats; 7th, fallow; 8th, rye; 9th, grass; 10th, grass; 11th, oats; 12th, buckwheat or peas.

Of the agricultural resources and population of Russia I am able to add

but little, as my late journey was too rapid to afford me the means of saying much on these subjects. The land northward from Wilna to St. Petersburg, thence southwesterly to Moscow and again northeasterly (273 miles) to Nijni Novgorod, is characterized by an almost uninterrupted flatness; and, like the whole of central and southern Russia, owes its superficial modification to the last glacial period, when the Baltic sea, covered by a vast thickness of ice, prevailed alike over the low levels of North Germany and Russia,—leaving Norway, Sweden and most of Finland as one great island. Throughout the route travelled, no rocks in place show themselves; but everywhere soil, except on the banks of watercourses, or where artificial excavations have been made. The general tint of the soil is a dark cream color, approaching black, where the river alluvions prevail. Its mechanical condition and chemical composition are good. For, although the quantity of organic matter is small, yet the proportions of potash, lime and phosphoric acid are such as for the present not to demand the farther addition of these elements.

The rock formations on which this soil reposes belong mostly to the upper carboniferous and jurassic periods; and consist of nearly horizontal strata of buff-colored and gray marly limestones, which are generally too weak when quarried to answer for building purposes.

The flatness of the lands, though often rendering drainage difficult, nevertheless has the advantage of protecting the surface from gullying, that great evil to agriculture in undulating and hilly countries. Besides, the even surface favors the retention of fertilizing elements, that would otherwise be swept away by drainage; and permits an uniform deposit of snow, whose annual spread upon the ground in immense quantity has much to do with the productiveness of Russian soil.

A striking feature of this vast region is the entire absence of fences of any kind. Stone is wanting equally with timber for the purposes of their construction. The most of the surface is covered by a stunted growth of firs, among which the white birch also is frequent; but one rarely sees a stem or tree-trunk large enough for splitting or being sawn. Indeed it is next to worthless at present for any useful purpose. The entire supply of wood and timber is brought at no small cost, from farther north, by means of the tributaries of the Oka and by streams flowing into the Baltic. The timber trade is therefore an important branch of national industry,—being rendered the more profitable, as wood is the only fuel of the inhabitants.

The condition of the liberated serfs, who form the agricultural population of the empire, is said to be slowly improving; although little as yet has been effected in their education beyond their religious training. This certainly has received much attention; and the fruits of it are everywhere apparent in the multitude of religious forms they observe. They are said to be faithful to all the fasts enjoined by the church, notwithstanding these require an abstinence from the use of meat during at least five months of the year, whereby the severity of many complaints to which the poor are exposed in the Russian climate are greatly aggravated.

The traveller across the region above indicated passes, at intervals of from three to five miles, the villages of these people, made up of thatched cottages with high elongated roofs and low sides and ends, pierced by few openings, and rarely glazed. These hovels are arranged close together upon the sides of narrow streets, without the accompaniments of fences, gardens or shade trees. In fine, there is little that bespeaks either thrift or comfort in their appearance. The larger towns, at distances of twenty to fifty miles apart, on the contrary, exhibit abundantly the tokens of wealth and often of luxury. Elegant churches, large warehouses and tasteful private dwellings, with gardens and shade trees, render such places all the more imposing from their contrast with the intervening region. Such towns are the residences of the wealthy landowners, the clergy, the merchants and artisans.

Much complaint is everywhere heard of the impoverished condition of the nobles, and of those who before the emancipation owned great numbers of serfs; but these classes are gradually adapting themselves to the new order of things. Numbers of them have reduced the luxury of their establishments, abandoned expensive annual journeys to Paris, and are now devoting themselves to various industrious occupations. The liberated serfs on their part, constitute a remarkably quiet and contented population, though still lacking in industry and self-care. As soon as the effect of a judiciously contrived school education shall reach them, rapid amelioration in their condition may be looked for. And since they are not wanting in good physical and mental constitutions, they are doubtless destined at no distant day, to assume an equal rank with the farm laborers of other European nations.

At first view, it seems rather remarkable that in a country where the agricultural labor is performed by such an unintelligent mass, a school of science so thoroughly endowed as that of Moscow should exist. But it should be borne in mind that all branches of higher education have, for more than a century, been much fostered in Russia. In proof of this, I may here mention a few facts connected with her public institutions. The Imperial public library at St. Petersburg contains above 800,000 volumes, besides 20,000 manuscripts in various ancient and modern languages. The Mining School, a government college for mining engineers with 250 pupils, stands at the head of all similar institutions in the world. Its mineralogical museum contains unsurpassed treasures, among which may be enumerated nuggets of gold and platinum, valued at 100,000 rubles, a colossal crystal of topaz at 10,000, an aquamarine at 43,000, and a multitude of other priceless specimens. The Rumiantsoff Museum of Moscow, with its library of 160,000 volumes, and numerous ancient Slavonic manuscripts, is another vast institution whose varied collections in art, in archæology and ethnography, is without a rival except the British Museum; while the university of the same city, founded by the Empress Elizabeth in 1755, has its seventy-five professors and 1,600 pupils. Finally, mention may be made of the Pulkova Observatory, erected at a cost of over $2,000,000, and whence more than 200 works on astronomy and geodosy have emanated within the last twenty-five years.

It has long been on the one hand, the settled policy of the government to encourage the immigration of learned men and artists from all lands; and on the other, to send her best young men abroad for the completion of their education. This latter course received a lasting impulse from the example of Peter the Great; and has ever since been recognized as conferring the greatest advantage upon the nation; as thereby foreign improvements of every sort have been introduced, and what is perhaps more important still, domestic prejudices—those greatest impediments to progress—have been rooted out. If we would duly estimate the force of this last consideration, we have only to look at the stationary civilizations of the Chinese and the inhabitants of Japan.

In reverting to our own agricultural schools, it is apparent, that so far as they have been put into operation under the very liberal grants of land by the general government to each State of the Union for this purpose, they are attempting a much humbler sphere of labor. As yet imperfectly furnished with teachers, apparatus and facilities for experiment, they are chiefly occupied with preliminary academical studies, blended with more or less exercise in manual labor, pertaining to farming operations. They are able also to exhibit favorable specimens in many of the staple crops of the country, as well as examples of improved breeds of cattle. All this is excellent, but the country requires something more. It may well be thrown out for public consideration, whether five great schools, similar to that of Moscow, would not prove serviceable to the development of our agricultural capabilities. One of these might be located so as to represent the climate and productions of the Gulf States; a second, those of the Middle States; a third, for the Eastern; a fourth, for the Western or lake region; and the fifth, for the Pacific slope. Can any one doubt that such institutions, standing thus to the present merely elementary State schools, as the college does to the preparatory academy, would powerfully advance the agriculture of the country?

CHARLES UPHAM SHEPARD, Sr.

Charleston, December 17, 1867.

A Trial of Several Commercial Manures.

Mr. Editor: Believing it to be the duty of every one to impart such information as he may acquire for the benefit of those following a like pursuit, I hand you the result of an experiment made the present year for the purpose of ascertaining the relative value of the four fertilizers tested. But before proceeding, allow me to state that no single year is sufficient to test the merits of manures, that it is only after repeated trials that we can reach something like positive conclusions.

The land, for this experiment, was broken with a two-horse Brinly turn plow, from seven to ten inches deep in the month of February, and remained

in this condition until April. On the 17th of April I marked off rows three feet ten inches apart with a seven-inch shovel plow, running from seven to ten inches deep, and throwing dirt on both sides of the furrow. In the bottom of this furrow I deposited the fertilizers, at the rate of 432 lbs. to the acre, and covered with two turn furrows. It was left in this condition until the 23d, when I completed the bedding up, and immediately drilled in the seed.

The stand was very good, and was worked like the rest of the crop. I selected for each fertilizer four rows one acre long, and four rows of unmanured land. I had picked, and carefully weighed, the two middle rows of each four, driving down stakes at the ends of the rows to be picked, so that the picker would be reminded to gather none beyond the stakes. All the picking was done by the same hand. The following will show the result:

PICKINGS.	1st.	2d.	3d.	4th.	Total.	Rate per Acre.
No. 1. E. Frank Coe's Phosphate	8	21	10	7	46	1242 lbs.
No. 2. Compound	12	30	10	4	56	1512 lbs.
No. 3. Wando	11	25	11	6	53	1431 lbs.
No. 4. Etiwan, No. 1	4	17	11	7	39	1053 lbs.
No. 5. Natural land	3	15	10	8	36	972 lbs.

Remark the difference in the gain over the natural soil: No. 1 gains 270 lbs.; No. 2, 540 lbs.; No. 3, 459 lbs.; No. 4, 81 lbs. These fertilizers cost the same, delivered at my depot, on the South Carolina Railroad. The compound was made of No. 1 Peruvian Guano, 2,240 lbs.; dissolved bones, 2,000 lbs.; land plaster, 1,200 lbs.; thoroughly manipulated before application. The best manures are those that mature the fruit the earliest, enabling the planter to reap the benefits of the earliest market, and avoiding the numerous disasters to which the cotton plant is liable. I shall continue my experiments the coming year, with a larger number of fertilizers, and, if desired, will hand you the result. Respectfully yours,

W. B. RICE.

Bamberg, S. C.

The Pea Bean as a Farm Crop.

Editor of Rural Carolinian: Last season I planted, as an experiment, an acre of the small round white bean, known in some parts of the country as the Pea Bean, and in others as the Navy Bean. The land was sandy and so poor that I feared it would not produce corn enough to pay for working it, as the only manure I had to put on it was a few loads of chip manure and three barrels of wood ashes. For that reason I made up mind to try the beans.

I broke up the land as for corn and laid it off in deep drills three feet apart. Having thoroughly mixed the chip manure and ashes, I scattered the mixture into these drills. It made but a light dressing. The beans were dropped

one foot apart, about five beans to the hill. I think it took about twelve quarts to plant the acre, but am not sure, as I made no note of the quantity at the time. I covered, with a hoe, about one and a half inches deep, the hills being considerably below the general surface. The crops suffered some from drouth, in spite of deep planting, but recovered, in part, when rains came on. I gave the crop two thorough workings, leaving the ground nearly smooth. My crop was fourteen bushels, worth in town four dollars a bushel. I am convinced that the yield of corn on the land, with the same manuring, would not have exceeded ten bushels, worth one dollar a bushel.

I am told, and can readily believe (from the results of this experiment) that at least twenty bushels to the acre can easily be produced on moderately fertile soil and with light manuring. Prices for this crop are always high and the markets never glutted. Could not this be made a profitable crop in our middle country? FABIUS.

Culture of Peruvian Bark in the South.

The original habitat of the Cinchona or Peruvian Bark, is the moist mountain forests of South America. It has been found to thrive equally well among the Neilgherry hills in India, where it has been introduced under the patronage of the British Government. It was reported several years ago that upwards of 40,000 trees had already been planted. It is probable that portions of the Southern States are as well suited to the plant as India, or even its native region in Ecudor or Peru, and experiments should be made to thoroughly test the matter. We had been thinking of making some suggestions on the point when the following letter from the distinguished Prof. M. F. Maury came to hand. It will explain itself:

OFFICE OF PHYSICAL SURVEY V. M. I., LEXINGTON,
4th December, 1869.

EDITOR OF THE RURAL CAROLINIAN: Enclosed you will find samples of three choice varieties of Cinchona seed—Peruvian Bark tree—from the government plantations of India.

The plant was first introduced there ten or twelve years ago, and in consequence of the sufferings endured in the hospitals during the Sepoy war for the want of quinine.

The orchards are already in fine bearing; the bark yielding three or four times more abundantly than it does in its native forests along the eastern slopes of the Andes.

The acclimatization of this plant and its cultivation in the South would be a boon of great value and the source of great wealth, and I invoke the influence of your journal and the aid of the florists and nurserymen of Carolina in assisting me in this experiment at acclimatization. Full and complete directions for planting the seed and treating the plants, are contained in November num-

ber of the *Farmers' Gazette* published in Richmond, Va., to which I beg to refer you.

I should be glad to have the results of the experiment.

Seed have been sent to the Mayor of Columbia for distribution among the florists there.

I consider the hill country of Carolina and Georgia to be more inviting for the experiment than the lowland regions.

Respectfully, M. F. MAURY.

We shall take pleasure in furnishing the seeds to skilful nurserymen and others who will agree to experiment carefully with them, and to report the results through THE RURAL CAROLINIAN. We shall try a few of them here, but have little hope of the plant thriving in the low country.

What is Cotton Seed Worth as Manure?

Although it is well known that cotton seed is a valuable manure, very vague ideas usually exist among our planters as to exactly what that value is in dollars and cents. When there was no other use to put it to, the question was, perhaps, not a very practical one, but now that oil companies are in the market to buy it, it is of great importance to the farmer to know exactly what a bushel of it is worth as manure, that he may make the most of it by using it as manure if the oil maker offers less, or sell it to him if he offers more. It would be well if our State Agricultural Society would cause careful experiments to be made, and the results published, to determine the question accurately.

The writer has been at some pains to gather information on the subject, and has collected some facts which furnish an approximate answer. Agricultural chemists rank oil cakes in general as worth one-third their weight in Peruvian Guano. Three pounds of cotton seed give one pound clean cake, which would make the seed equal to one-ninth its weight of guano, if the seed could be applied as advantageously as the cake. But as the seed when applied whole rots with difficulty or sprouts, and if rotted in the barn-yard before being applied loses much of its ammonia, this proportion should be further reduced—certainly to one-tenth. If now guano is worth $100 per ton, cotton seed would be worth ten dollars, or a half cent a pound.

We may arrive at nearly the same result in another way. Forty bushels of cotton seed applied to an acre of ground, will increase the yield of the acre, under the most favorable seasons, six bushels. Six bushels of corn made, but not gathered, are worth six dollars, which would make the cotton seed worth fifteen cents a bushel, subject to discount for the time and contingencies necessary to make next year's crop—say thirteen cents a bushel, cash.

This result again agrees with the experience of a very eminent and successful Georgia planter, the Hon. Robert Toombs, who made careful experiments on the subject, and informed the writer that he found he could not afford to give fifteen cents a bushel for cotton seed as manure. A.

Is Broom Corn a Profitable Crop?

The culture of broom corn has attracted little attention hitherto in the South. Inquiries are now being made about it, however, and the probability is that many may be induced to engage in it if satisfied that it will pay. It has been made to pay at the North and West when prices were much lower than at present. It should be tried here, and, in connection with it, the manufacture of brooms.

Broom corn belongs to the same family as the sorghum, and requires similar soil and treatment. Good corn land is good land for broom corn; but new black or loamy soil is best. Heavy clayey land is not so suitable. Well-rotted stable manure and wood-ashes are excellent fertilizers for the crop.

The land should be deeply broken up and thoroughly pulverized. Lay it off with deep furrows (as for corn) from two and a half to three feet apart, according to the strength of the soil, and (if not already manured broadcast) scatter the manure into the drills. Sow pretty thickly, but thin out to four or five inches apart. If you wish to cultivate both ways, check off from three to three and a half feet each way, and drop eight or ten seeds in the hill, thinning out to from five to seven plants. Plant the same time as corn or a little later, and cultivate the same as corn.

It is not desirable to produce the heaviest possible growth, as medium-sized corn is most saleable and brings the best price.

It will be ready to harvest, in this climate, if the season be favorable, about the 1st of August. The harvesting is an important part of the process. It has generally been customary to bend down the tops a few days before cutting, but this practice is now abandoned by most cultivators as useless. The crop should be cut before the seed is mature. For seed, leave a sufficient quantity standing till ripe. The tops are cut off from four to six inches below the brush. There are horse-power machines for scraping off the seeds; also hand machines.

To sell well, the brush must be of a good color. The drying is therefore important. If the article assume a brick-dust color, it will not sell for the highest price. The reddish cast is produced by allowing it to get too ripe before cutting, or by exposing it to the sun after it is cut. Both must be avoided. It should be dried under sheds erected for the purpose, turning it as necessary.

It should be assorted before baling, making three grades. A small-sized hay-press may be used for baling. The bales may average from two hundred and fifty to three hundred pounds.

Will it pay?

An average crop at the North is about five hundred pounds per acre, but on the rich lands of the West much heavier crops are made. Just what can be done in South Carolina or Georgia, we are unable to say, as we have never grown the crop for market, and only in a very small way for home use; but

we think we may at least reach the average crop. A writer in the *Nashville Union* contends that it can be made a profitable crop, and gives the following reasons why it should be more generally grown. He says:

"It costs no more to raise it than Indian corn, while it is a more certain crop than either the wheat or the Indian corn. It is harvested in August, a time when labor can be had. Eight dollars per ton ought to pay for cutting, curing and baling. As it goes into the Eastern markets, six weeks earlier than from the West, it commands $100 more a ton. As soon as that of the West is marketable there is a heavy decline. Hence, early planting is the most profitable. One may safely make his calculations, to raise from six to eight hundred pounds per acre, which would yield him from $50 to $100 per acre. As high as twelve hundred pounds to the acre has been raised in the West. A party near Franklin will this year realize from about fifteen acres, not clear of stumps, $100 an acre. There are others we might mention who are doing equally as well."

The seed can be obtained from the seedsmen in most of our cities. It takes about four quarts to the acre. Will those who may plant please report results?

Is it Safe to Plant Ramie?

The Ramie plant will grow and produce large crops in all the Cotton States. Of this there can be no doubt; but our question involves other considerations. Have we the means of economically preparing the fibre for market, and when prepared can a market be found, and a remunerative price obtained for what we can produce? Doubtless these questions will soon be answered, but possibly at a heavy cost to those who may embark in the culture. Possibly, on the other hand, fortunes may be quickly made by those who are bold enough to try Ramie planting largely, and at once.

We learn from New York and New Orleans that "orders from European manufacturers have arrived in this country for large quantities of this fibre, and there is a growing demand for a number of domestic manufactories which shall work up this fibre." It is also stated as a fact that Manchester and New York houses, having heard that the South is getting into the cultivation of Ramie, are calling in advance for all that shall be produced, and are ready to furnish capital for raising crops.

To what extent these statements may be safely relied upon, we cannot say, as much that has appeared in print, in reference to the Ramie, has plainly been published in the interests of those who have Ramie plants to sell.

It is a fact, however, that the Ramie is now attracting a great deal of attention. One of the most interesting things on exhibition at the late fair of the American Institute at New York, we are told, was "a modest little case in the silk department, containing several bundles of the beautiful and lustrously white fibres of the Ramie plant, which promises soon to enter, like a wedge, between silk and flax, and revolutionize the manufacture of textile fabrics. The same case contained sixteen specimens of Ramie cloth, dyed of different colors, and a handkerchief with a saffron-hued border and centre,

which has been in use for some time, and has been washed repeatedly, without losing its natural silky lustre."

We have not answered the question at the head of this article. We are unable to do so; but each fact we may collect helps to throw light upon it. We want more of them—*facts*, not speculations.

Varieties of Cotton.

The Dickson Cotton is an improved sub-variety of what was formerly known as Boyd's Prolific. It was first introduced by Mr. David Dickson, of *Oxford*, Ga., not by the more widely known David Dickson, of *Sparta*, Ga., who, however, plants the same variety. Mr. W. W. Simpson has brought forward another Prolific, said to be excellent.

Hunt's Cotton is probably a cross between the Prolific and the Petit Gulf. Mr. E. M. Pendleton, of Hancock Co., Ga., a scientific man as well as a practical planter, thus describes an experiment with the Hunt and the Prolific planted side by side:

"The Prolific and Hunt seed were each planted in a bottom, and did not suffer much for rain. The former obtained from Oxford Dickson, three years ago by W. H. Brantley, of this county, had upon one stalk 522 forms, blooms and bolls. It fruits much thicker than Hunt's, matures earlier, but is more affected by drouth and cannot endure long spells of dry weather like Hunt's; one hundred bolls of the Prolific, selected, weighed one pound and four ounces; one hundred of Hunt's weighed one pound and six ounces. One hundred pounds of seed cotton of Hunt's, ginned out thirty-six and a half pounds of lint. One hundred of Prolific, (Dickson and Simpson mixed,) ginned out thirty-five and a half pounds. The staple is about same as to length; under the microscope Hunt's is a little the finest, and yet three ladies, without knowing each others opinion, selected the Prolific as the whitest and finest variety. Perhaps the most damaging quality of the Prolific is its great tendency to fall out after opening. The ground is almost covered in thick cotton, after windy weather, and then a storm succeeding frequently destroys many bolls. The Hunt variety is not liable to this objection."

Taking the good and bad qualities of each together, Mr. Pendleton thinks it the most judicious plan to plant both varieties, and then, notwithstanding the Prolific would always be most praised for its early and thick fruiting, when a long drouth comes the farmer would soon begin to praise the Hunt, as holding on to the bolls with more tenacity.

The Peeler Cotton has already been described in our columns, and commented on by correspondents.

We have heard of, but not seen, a new variety that has no flower stalks. It has one central stem, and the flowers are sessile in the axils of the leaves. It is called James' Cotton, and is said to have larger bolls and a longer staple than other kinds. We give the statement as we find it, but do not vouch for its correctness.

The Sea Island Cotton Question.

Editor of The Rural Carolinian: The stalks of prolific upland or short staple cotton, on exhibition in your office, are most interesting subjects for investigation by progressive farmers. Mr. Williamson, of Darlington, recently told the writer his plan for securing good seed. He keeps an extra hand, who is paid special wages, to pick only from such stalks as produce pods with five lobes; and he finds that such selections by a trusty employee average twenty per cent. in weight more than the same quantity of pods having but four lobes. His experiment was made by weighing 100 bolls of each sort. His picker gathered about fifteen pounds each day. Mr. Williamson intends to plant a large portion of his crop from seed selected in this way.

Great results, or agricultural successes, are accomplished by attention to the comparison of productive varieties of cotton, by systematic and liberal fertilizing and by deep plowing of the soil; and that farmer, whose practical and tested information is cheerfully given to encourage the advancement of Southern productions, deserves to be considered a benefactor, especially at this time when laborers for field-work are uncertain and decreasing in number.

From statements of those having much experience in the culture of the long staple varieties, the experiment of growing short cotton on the seaboard and sea islands has resulted satisfactorily, and the belief is entertained, and the hope is encouraged, that the planters will succeed in supplanting the sea island kinds with prolific uplands. The growth, preparation and general management of sea island cotton is very expensive, and the selling of it is a matter of chance, hazard and petty peddling, with all their vexatious risks attendant. It has become a most treacherous business. The cultivation of this cotton does not yield the producer a reasonable living, and it appears almost futile to contend against its decline. The competition by other countries now producing sea island cotton at cheaper rates, similar to that of Carolina, Georgia and Florida, and the fact that the spinners are discontinuing the use of American sea island varieties, are serious admonitions and undoubted evidences to those in the trade. It would be startling to estimate the sum total of the aggregated amounts sunk in the efforts to produce sea island cotton in the past four years. Four planters in every five, who relied upon a sea island cotton crop alone, and had to contend with depraved labor, have absorbed their capital or the funds they borrowed. Some have failed completely. Have these losses and failures been caused by neglect of economy, unskilfulness or want of management? Emphatically, no! Very few have ever worked so perseveringly and well in any other localities, or have restricted themselves and their families to such simplicity of clothing and food. They have not had the means, generally, to obtain the usual comforts of life. Growing sea island cotton appears, truly, to have ceased to afford a money profit. This expression of opinion is not a mere conjectural assertion; it is a conclusion deduced from observations and practical experience in a

business acquaintance with the subject during forty years. Even prior to the war, the cultivation of short cotton, and other agricultural staples of this country, was far in advance when compared with long cotton production. And it is easily maintained that the culture of the extra grades of fine sea islands has been an error, if not the bane, of ten out of every dozen planters, who, investing their capital in the pursuit of one or two dollars per lb. for cotton, have ruined themselves in the chase after these decoying and eluding phantoms. The effort to make money at these prices is a blunder. It is stated by those having the best facilities for knowing the facts, that sea island cotton spinners in England, France and elsewhere, have made and do now make immense profits. It is conceded that the fortunes amassed by them are princely. It may be consoling to learn that somewhere great gain has accrued from the growth and use of this fleecy tribute from the sea islands. If, however, the books of the factors be examined to speak concerning the planters and their success during the last thirty years, the figures of the accounts therein preserved will show very plainly that the laborious producers have held bags from which others have dexterously devoured the pudding.

These remarks, from one whose business relations have been intimately connected with, and who has been practically engaged in the culture of both staples, short and long; who has also visited and obtained much important information from manufacturing establishments in this country and in Europe, suggest, as a proper conclusion to the earnest expressions of long considered and frequently enunciated views, this deliberate conviction, namely, that in the judgment of himself and others of ripe understanding on this subject, when cotton mills, spindles and looms are set in motion in our midst, thereby stimulating other manufacturing enterprises, and converting the ready bales of raw cotton into yarns and diversified fabrics for export, the cotton growing States of the South will then have before them a destiny of unparalleled and boundless progress and prosperity.

In closing this communication, designed to elicit the reflection and action of others, it may be as well to state on the authority of one of the most practical planters, and who had been among the earliest cotton spinners and manufacturers in this State, and frequent conversations with him on the subject in his lifetime, that cotton taken from the gin-house to the cards and spindles, is equivalent to a profit of over thirty per cent. to the home spinners, in competive efforts with the distant or foreign spinners.

WM. M. LAWTON.

IRISH POTATOES should always be kept in the dark. Rural housekeepers do not need to be told this, but many others who live in towns and cities should know that potatoes exposed to the light, for a day only, have their flavor injured, and the longer exposed the worse they are. Never use a greenish potato.

Department of Horticulture and Rural Art.

The Olive and its Cultivation.

A Branch of the Olive Tree.

The olive appertains to a genus of plants of the family of Jasminées, of which the flowers have one calyx, but with four indentures, two stamens, and one ovary surmounted by a single style, becoming a rounded drupe containing a single seeded nut. This genus comprises trees and shrubs, with leaves entire, opposite, evergreen, and with flowers disposed in bunch or panicle. At present there are sixteen or seventeen species known, of which only one, the *Olea Americana* or Devilwood, is indigenous to America. The oil-bearing olive, although a native of the temperate seacoast ridges of Asia and Africa, has been so long known and extensively acclimated in Europe, that botanists now style it the European Olive, (*Olea Europea.*) This tree is commonly in the south of France, of three to six feet in circumference, and twenty to twenty-five feet high, but in warmer climates it attains double these dimensions. Ordinarily the stem does not rise more than six to ten feet, then divides and subdivides, rarely forming a rounded and regular head. Its leaves are coriaceous, lanceolate, green above and whitish and as if silvered underneath. Its flowers are small white, disposed in axillary bunches, of which one or two, rarely more, become drupes or fruits, known under the name of olives, of an ovoid shape, containing one oblong oval nut enveloped in a pulp, at first greenish, afterwards of deep or blackish purple when ripe, soft and oily. It flowers in May or June, and its fruits are ripe in November. More than twenty varieties are known in France, and one variety is said to have been seen in the Kingdom of Naples, with fruits of fair size, and so free from bitterness that they can be eaten from the tree without any preparation; but this I doubt, as I have never seen it in any nurseryman's catalogue.

The nearness to the sea of most of those parts of Europe where this tree is cultivated, has led the ancients, and many among the moderns, to believe that it would not flourish more than forty or fifty miles from the sea, but this

opinion is without foundation in fact. A temperate climate, rather warm than cold, is necessary to the olive, which in Europe has been cultivated as far North as 45°; and in the Tropics, although it grows vigorously, yet it bears no fruit. It stands much more cold than the orange, for while in February, 1835, all of my orange trees were killed to the ground, yet I did not lose one of my olive trees, which were then young and small; and during the cold of last Christmas, when the thermometer stood at 19° F., I could not see that a single leaf was injured. Probably no cold above zero would seriously hurt it unless it should happen in February.

Originating in the most temperate parts of Asia, if it has never been able to stand the cold of the North or the heat of the Torrid Zone, yet few trees are otherwise less fastidious, for it can be grown on the poorest soils, and refuses to grow only in wet or swampy ones.

There are few trees that admit of so many methods of propagation. Its limbs and branches, cut into proper lengths and put into the ground, grow readily; its roots, cut into pieces and planted on land properly prepared, soon shoot up plants; even its bark, cut into fragments and sowed like seed, also produce young shoots; the old trees produce at their roots a number of suckers, which taken off and set out, serve also as a means of propagation; besides, the branches and suckers can easily be layered; and lastly, the sowing of the nuts, although little used, is yet the only method employed by nature.

This tree grows slowly in a cold climate like that of France, and it is usually at the end of ten or twelve years that, grown from seed, it begins to bear; but in a warm one like ours, probably this period would hardly exceed the half, especially where proper care is bestowed upon it; but, of course, large crops can hardly be expected under double these periods. The length of time required by olive trees grown from seed to bear, is the reason why they are so seldom raised in this way, as also the uncertainty about the quality of the fruit, rendering it advisable generally to bud or graft them.

The olive tree can be propagated by all the methods of budding and grafting, but the shield or T budding is the most commonly used, and the most advantageous, when performed at the ground, because in case the trunks should from any cause get destroyed, especially from cold, there would be more reason to hope that the new shoots might start from above the bud or graft, and thus not require to be budded or grafted again. The most favorable time for budding is the month of May. Crown and cleft grafting are only suited to old trees of which it is desired to change the fruit. These two kinds of grafting are only practiced at the end of winter.

The plan of propagating from cuttings is very much used, because thus can be obtained trees of any desired variety, without being obliged to resort to either budding or grafting. Cato and Pliny, in treating of the method of making cuttings, recommend that they should be three feet long, and that they should be driven into the ground with a mallet; but it is not necessary to prescribe any other rule on this subject than the length should be proportioned to the size; and the best manner of setting them is to make holes

three feet square and two feet deep, put the cutting in perpendicularly, so that not more than one-quarter, or, at most, one-third, shall remain above ground when covered; it is also necessary to be careful to have the earth put immediately around the foot of the cutting as mellow as possible. If the ground is dry when the cutting is set, water immediately; and if the spring is dry, continue to water every eight or ten days until it has certainly taken. When cuttings are set in land that cannot be watered, be careful to set them very deep, so that, when covered, only one eye shall remain above ground.

The best time to set cuttings is the month of March. Although the olive is very seldom propagated by seed, yet, I think, it advisable to tell how to do it successfully. In the month of March take thoroughly ripe olives of the best varieties; take off the pulp, and soak the nuts twenty-four hours in a strong ley, which will clean them thoroughly; then sow them in land well manured and prepared, in rows about twelve or eighteen inches apart and two or three inches deep, and at proper distances apart. They will begin to come up in October. In this country, where wood is plentiful, time and labor would be saved, and more vigorous trees obtained, by sowing the seeds where they are to remain, marking and protecting them by two or three short stakes.

Olive trees grown from seed have a very long tap-root, numerous lateral ones, a stem quite straight and perfectly smooth, which indicate vigor; whilst plants produced by other means of propagation have none of these advantages. Another important consideration is by the seed the olive tree begins its life; whilst those grown from suckers and cuttings, may be said to be only extensions of the life of the individual from which they were taken Besides these advantages belonging to seedlings, we may hope to obtain new varieties, either more valuable or better adapted to our soil and climate.

The distance between the trees will depend very much upon circumstances. In rich land, and in a mild climate, thirty to forty feet is not at all too much; while in poor land, or where they are likely to be killed down by cold, twenty feet apart would be quite distance enough. Whatever may be the distances between the trees, a crop of fruit cannot be expected very early; but if the proprietor does not obtain fruit from his trees, their presence in his land lessens very little indeed the produce of any crop that he may cultivate among them, while the manuring and cultivating the land in other crops will prove of great benefit to his trees until they grow so large as to allow no room for cultivation. When the trees have acquired sufficient size and vigor cultivation will be no longer necessary; but if the trees be set fifty feet apart, and regularly manured and cultivated, they will bear every year, instead of alternate years, as is their usual habit.

The cultivation of these trees will depend very much upon the method used in propagating them, for as those grown from suckers, cuttings, or layers have few and superficial roots, deep culture would destroy many of these roots and thus prove rather an injury than a benefit, while with those obtained from seed the deeper the culture the better.

It has been stated that this tree grows slowly, especially in climates almost too cold for it like the south of France, but in return it is exceedingly long lived and attains great size. One olive tree is mentioned, in the Duchy of Genoa, which was over twenty-three feet in circumference, which M. De Candolle estimates to be a little more than 700 years old, and another near Villefranche, which was thirty-eight feet two inches round at the ground, and nineteen feet three inches round at the height of a man. These gigantic trees are a little fortune to their owners, for that near Villefranche, according to M. Risso, yields, ordinarily in a good year, 100 kilogrammes (200 pounds) of oil, and it has produced even 150 kilogrammes, (over 300 pounds.) M. Robert, of Toulon, gives the dimensions of a very old olive tree on the property of Madame Beauregard, near Hyeres, as thirty-six feet (French) at the base, and twenty feet at the height of a man, and of which he estimates the yield at 250 litres, (quarts English,) but these enormous products are the exceptions, not the rule.

Although this tree has many enemies in Europe, yet during the thirty-six years that I have had my trees, (numbering hundreds,) I have never had a diseased tree, nor had one attacked by any insect, and the only enemies they have to fear are cold below zero, and cattle, sheep and goats, who browse upon and injure young trees.

Although the olive tree will grow and thrive in almost any soil, yet from my observation, which has been very limited, and from Italian authorities, I believe that it is much more productive in clayey or rocky soils than in sandy ones.

Mr. Editor, I have above given you all that I thought necessary relative to the olive and its cultivation. Should any one of your subscribers desire further information it will be cheerfully furnished, but as this is the day of small things, a stamp to prepay postage must come with every communication requiring answer.

Your well wisher,

ROB'T CHISOLM.

Garden Crops—What to Plant.

This is the month in which, in our climate, to prepare for the active campaign in the garden. Here in Charleston, and southward, considerable planting is done in January. Further north, as in our middle and upper country, the work of preparation,—manuring, digging, etc., should go on and seed be selected for planting in February and March, and the question will come up, "What shall we plant?"

Persons who look over seedsmen's catalogues are apt to be perplexed by the numerous varieties offered and their conflicting claims. Out of twenty or more varieties of garden peas, and as many of snap beans, cabbages and

turnips, how shall one choose? We cannot try them all in a small garden. Which are best?

We will not attempt to answer this question definitely and positively for all or indeed for any one. What is best for us may not be best for our next door neighbor whose tastes may be different, much less for the reader whose soil and climate may also differ widely from ours, but, at the same time, our experience may be worth something, and serve as a partial guide in making a judicious selection. The kinds named in the following list are mainly such as we have tried and found desirable, our experience extending over many years and being acquired in several different localities in the South:

ASPARAGUS.

Giant Dutch Purple Top.—The largest, and, we believe, the best sort in cultivation.

DWARF SNAP BEANS.

Early Feeje.—The earliest kind we know. Hardy, prolific and excellent.

Long Yellow Six Weeks.—Early and productive.

Early Valentine.—Not quite so early as the preceding, but excelled by none in quality.

Refugee.—Not very early, but very prolific and excellent.

White Marrow.—Not good as a snap or string bean, but excellent as a shelled green bean.

Dwarf Wax.—Very tender and rich.

POLE BEANS.

Carolina or Sieva.—This we think, on the whole, best of all butter beans, but some prefer—

Large Lima.—Good and fine flavored.

Indian Chief.—(German Wax Bean)—good either as a snap or as a shelled bean.

BEET.

Extra Early or Bassano.—Earliest and best.

Early Blood Turnip.

Yellow Turnip.

Henderson's Pineapple.—New, beautiful and good.

BRUSSELS SPROUTS.

Richmond's Compact.—An improved English variety.

BROCCOLI.

Large White Early.—A French variety.

Purple Cape.—The most reliable in our climate.

CABBAGE.

Early York.—Well known and trustworthy.

Early Winningstadt.—Heads solid. One of the best.

Green Curled Savoy.—Best of all in flavor. Heads not so solid.

Flat Dutch.—An excellent late kind.

CARROT.

Early Scarlet Horn.—The earliest kind. Excellent.

Scarlet Altringham.—Handsome and productive.

Long Orange.—Best for a field crop.

CAULIFLOWER.

Early Welcheren.—Very good.

Early Asiatic.—Large. One of the best.

CELERY.

Large White Solid.—Popular and very good, but we prefer—

Incomparable Dwarf.—Smaller but of excellent quality.

SUGAR CORN.

Crosby's Early Sweet.—Very early, and in every way excellent.

Stowell Evergreen.—Later and equally good. Remains fit for the table much longer than any other kind.

Mexican Sweet.—The best of all in quality, and suited to our climate. Very scarce.

CUCUMBER.

Early Russian.—The earliest kind we know. Small but productive.

Early White Spined.—Early and a great bearer.

Long Green.—A standard late sort. Excellent for pickles.

GUINEA SQUASH OR EGG PLANT.

New York Improved.—This is the best sort, but—

New Long Purple is earlier.

KALE OR BORECOLE.

Dwarf Green Curled.—A very hardy variety.

KOHL-RABI.

Early White Vienna.—Is the best kind for garden culture.

LETTUCE.

Brown Dutch.—One of the hardiest and best

sorts, but objectionable to some, on account of its color.

Hammersmith.—An excellent winter variety.

Boston Curled.—An excellent sort for early sowing.

Perpignan.—Very large. Stands the heat better than most varieties.

MELON (MUSK.)

Netted Citron.—Small, but fine flavored.

Netted Citron.

White Japan.—Quality, the best.

Beechwood.—Small, early and excellent.

Beechwood.

MELON (WATER.)

Carolina.

Lawton.—Pure seed is scarce.

Orange.—Pure seed is scarce.

Mountain Sweet.—Excellent where it will succeed, but not trustworthy in all localities.

Phinney's—A new sort, of great promise. Not well tested here.

Strawberry.—New, and said to be best of all.

OKRA.

Early Dwarf—Early, but small.

Long Green.—Most productive.

ONION.

Yellow Dutch or Strasbourg.

White Portugal.—Milder than the yellow and red sorts.

Wethersfield Red.—The best market variety.

Danver's Yellow.—Very productive.

PARSLEY.

Dwarf Curled.

PARSNIP.

Hollow Crowned.

PEPPER.

Large Sweet.—Good for pickling.

Long Cayenne.—Most used for seasoning.

Red Cherry.—Used green, for pickling.

PEAS.

Early Tom Thumb.—Dwarf, and very early. Grows only ten inches high.

Early Dan O'Rourk.—One of the earliest and best. Two and a half feet.

Bishop's Dwarf Long Pod.—Very productive and excellent. Grows about one and a half feet high.

Champion of England.—Very rich flavored and productive. Late.

Large White Marrow.—A standard late sort.

PUMPKIN.

Cashaw.—The best variety for table use.

Large Field.—Grown for stock.

RADISH.

Red Turnip.

Early Scarlet Short Top.

Early Rose Olive-Shaped.—Excellent and early.

French Breakfast.—Very beautiful; of rapid growth and tender.

RHEUBARB.

Linnæus.—A large early sort.

SPINACH.

Round Leaved Savoy.

Large Flanders.—Largest and best.

SQUASH.

Early Bush Patty Pan.—The earliest and most productive.

Summer Crooknecked.—Better than the preceding, but later.

Turban Squash.

Turban.—A new and excellent sort.

Hubbard.—A well known excellent squash.

Boston Marrow.—It is difficult to get this pure. When pure it is not excelled by any variety.

Canada Crooknecked.—Small, but excellent. It often escapes the squash maggot when others get destroyed.

TOMATO.

Cedar Hill Tomato.

Large Smooth Red.—Old, but better than most of the new sorts.

Large Yellow.—Of a different flavor from the red sorts. Very good.

Cedar Hill.—One of the best of the new sorts.

Foard.—Another new sort of great promise. Large, smooth, solid and fine flavored.

TURNIPS.

Early Red or Purple Top.—The best for early spring and late fall or winter sowing.

Robertson's Golden Bell.—An excellent winter variety.

Sweet German.—Very sweet and fine flavored.

Skirving's Improved Swede.

Yellow Malta.—Excellent, but the seed is scarce.

The varieties we have named are mainly well tested and known to be good, but they cannot all be expected to succeed in all localities and soils, or to suit all tastes. We submit them suggestively.

WHERE TO BUY SEEDS.

Seed packages are generally labelled "Fresh and genuine." Seedsmen as a class are probably as honest as any other class of traders; but there are knaves among them, and their facilities for swindling the planter are great. The greatest danger, however, in buying garden seeds lies in the fact that our small dealers generally have a stock left over, which they often continue to sell from year to year, sometimes no doubt ignorantly supposing that they are still as good as ever, when the fact is they have entirely lost their germinative power. If seedsmen would put the date upon each package, we should have a means of judging for ourselves of their freshness. As it is, the price of the seeds is the smallest part of the loss, for we often have a late crop, or none at all, in consequence of planting worthless seeds.

Where the seeds desired can be procured near one's residence, of a trustworthy dealer, we would not advise sending abroad for them; but where this is not the case, they can readily be ordered by mail from any distance. We have no interest in advertising gratuitously any seedsmen; but, for the benefit of those of our readers who may wish to order seeds by mail, we will mention two whom we know to be trustworthy and prompt, and whose seeds have always, in our experience, proved "fresh and genuine." They are Edward J. Evans & Co., York, Pa., and James J. H. Gregory, Marblehead, Mass. Send for catalogues if desired. We wish it distinctly understood that we have never received, and do not desire to receive, the smallest favor from either of these gentlemen, and that they are abundantly able to pay for any advertising they may need. We have no doubt, too, that there are many other equally deserving dealers. We speak of these simply because we have bought of them and proved their seeds.

The Scuppernong Grape.

It gives me pleasure to send, in accordance with your request, my ten years' experience in the culture of the Scuppernong grape. I will first give the several points, from one to six, and then present a general view of the subject.

1. The vines should be planted 45 feet apart, or 21 vines to the acre.

2. The vines should be planted in December or January.

3. We have the White and Black Scuppernong, and the Flower, the Mish, and the Bullace.

4. One hand is required for each ten acres under cultivation, and in the gathering season one hand to the acre.

5. The yield this year has been equal, in quantity and quality, to the crops of the preceding ten years. This variety is the only grape entirely free from disease, and the vines are not troubled by insects. They sprout very late in the spring, and are, therefore, never injured by frost, and their hardy wood, and the thick, leathery skin of the grape exempt them from injury from hail-storms, etc., rendering the Scuppernong the surest crop of grapes I have ever found or heard of in any vine-growing country. At my old home on the Rhine, we had in each five years two entire failures, two seasons of inferior wine, and only one perfect crop; and I found nearly the same results in Austria, Hungary, France, and Italy, and in the northern or western part of the United States. Indeed, we have not in this country a single variety, except the Scuppernong, which is not liable to injury from frost, or in danger of not ripening through unfavorable seasons or the various grape diseases. With this variety, however, we may calculate with certainty each year, in both quantity and quality, and with the fifth part of the labor and expense attending the cultivation of other varieties, the average yield for a three-year-old vine is one peck; five years old, two bushels; full grown, ten year vine, twenty-five bushels.

6. Expenses per acre the first year are as follows: 21 plants, of good size and well rooted, $5; planting and staking, $10. Third year, 84 arbor posts, and 21 dozen fence rails, $15. Fifth year, 336 posts and 1,000 rails, $60. Tenth year, 500 posts and 1,500 rails, about $100. From the fifth year it takes one hand for cultivation and the extension of arbors, and from the first to fifth year about two years labor of one hand is requisite. After the tenth year it costs very little to manure the vines every two years, and gathering expenses and repairs of arbors may reach $10 per year. When 15 years old, and kept in the highest cultivation, the vine will yield 35 to 40 bushels of grapes. We have a good many single vines that bear 50 to 75 bushels. A full ripe bushel of Scuppernong grapes weighs 60 pounds, and will yield 4 to 4½ gallons of juice, after which the pommace will make five gallons of vinegar. To the four gallons of juice add four pounds of crushed sugar, and at the end of six months you will have 3½ gallons of good marketable wine, worth on an aver-

age, $2 50 per gallon. The five gallons of vinegar will yield at the end of three months 4½ gallons of first quality vinegar, worth 50 cents per gallon, thus realizing from one bushel of grapes, $11; from one vine in full bearing, $275; and from one acre of 21 vines, $5,775. The expenses attending the production of this wine foot up nearly $800, and for the vinegar $125, leaving a profit of about $4,850 on the product of the acre of vineyard.

The Scuppernong is the most profitable grape in the world, but is known only in the South, especially in the Carolinas, as the summer seasons of the North are not long enough for its successful cultivation. In the Carolinas it grows on the poorest sand-hills, on the lowest swamp lands, and on stiff, clay, gravel land, the last named being the best for it. This grape has grown wild, without care or effort to improve it, but last year I gave this subject special attention, and found the vines highly susceptible to improved cultivation.

The vine must be planted well rooted. Dig a hole four feet square and two feet deep. Throw the first foot of earth on one side, and the second foot on the other side. Throw the first foot of earth back into the hole, then fill up to within six inches of the top with good compost, and then spread the roots of the vine out carefully, and fill the hole with the same compost, about three inches above the surface, trampling it level with the surface with the feet. Fasten the vine to a pole about three inches thick, and eight feet above ground, put in when the vine is planted. During the first and second years, when the vine is sprouting, all side limbs should be pinched off smooth, the main stem only being allowed to grow up. Keep the main stem well fastened and straight, and raise it about a foot higher than the pole, and then allow the sprouts to spread out in all directions on a twelve feet square arbor. I used last year, instead of slats or rails on the arbors, telegraph wire spread over like a sifter, about two feet square, with surprising results. The vines grew twice as much as those of the same age on wooden arbors, and the grapes ripened more equally, and one-third more in quantity. The wire arbor costs little more and will stand thirty years when galvanized. The sun and air strikes better through the wire, and the vine will grow much faster than when on the slats or rails, the little ringlets which sprout out from the vines winding around a small thing more readily, and thus keep the vine steady and assist growth.

The third year the vines must be manured and every three years thereafter. For this purpose dig a ditch around the vine (so far as the little roots reach) one foot wide and one foot deep. Fill the ditch half full of compost and then fill up with top soil. The manuring should be done in December or January, as summer manuring makes the vine rusty, and causes the fruit to drop off before ripening. Raw stable manure should not be used, but should first be composted, mixed with any soil. The cheapest and best is swamp muck, and if you wish to make it as rich as guano, mix with it bone dust, ashes, and lime, and about 10 per cent. of stiff soil.

Unlike all other grape vines the Scuppernong does not need to be pruned back. After the grapes are gathered take out all the dead limbs, and cut off all

ringlets, for they are destructive enemies of the vine when wound around the limbs, preventing full growth, and sometimes killing the limbs. The outside end limbs, of last year's growth, should be straightened and spread out on the arbor in all directions and fastened. This is an important work, as without it the vine will grow wild and tangled, and the limbs be prevented from spreading, in consequence of which some of the fruit will never be reached by the sun or air, the sugar in the grape will not get a chance to concentrate, and the grapes will fall off before maturing.

Grapes should be gathered at three different times by the following plan: Make a wooden frame about ten feet square, placed on two axles with four small wheels; cover the frame with a strong cloth, made a little deeper in the middle; roll this frame under the vine you wish to shake; then shake the vine gently with a smooth iron hook fastened on the end of a stick, when only the perfectly ripe grapes will fall. The unripe grapes must be picked out for vinegar, and the leaves and trash should also be taken out. In this way two hands may pick one hundred bushels a day. From the first gathering you will get about one-third of the crop. The second gathering comes fourteen days later, and the third fourteen days after the second.

The above treatment of the Scuppernong insures the following improved results on the old treatment: The first year we get three times as many grapes, which will, without the addition of sugar, produce a splendid wine similar to Rhine wine. By adding one-half to one pound of sugar to the gallon we get heavy wines, similar to Malaga, Madeira, and Port.

Scuppernong rooted plants can be raised only by layers; cuttings do not take root, but bleed to death. The seeds of the White Scuppernong produce the Black Scuppernong. The white grape is a grade richer in sugar, and finer in flavor than the Black, Flower, and Mish grapes.

Kenansville, N. C. LOUIS FRŒLICH.

Potato Rot—Remedies Suggested.

"Long and laborious study by scientific men has revealed the cause, which has been fully proved to be a parasitic fungus, known to microscopists as the *Peronospora infestans*. The honor of clearly proving this belongs to A. Le Bary, of Berlin, a microscopist and botanist, who has devoted many years of study to this class of plants and the diseases they produce. A blight of the tops always precedes the rot of the tuber, and the disease, consequently, shows itself upon the leaves.

"It starts from a spore of very minute size, which germinates upon the surface of the leaf. The mycelium enters the cuticle sometimes through the stomach or breathing holes, and sometimes directly through the cuticle, piercing the cells. After penetrating the cuticle the mycelium extends rapidly, and branches through the substances of the leaf, living upon the chlorophyl or green matter; they are the feeding roots, as it were, of the parasites, which rapidly blight the portion of the leaf upon which it grows, producing brown or discolored patches. In the meantime, fruiting branches push out into the

air, through the cuticle or through the stomach, bearing numerous spore cases. These are little sacs, each producing twelve to sixteen spores. These spores are oval in shape, having at either end a hair-like organ, which is in rapid motion for some time after the spore escapes from its sac, giving it the appearance of a living animalcule, and hence called by botanists zoospores. We will simply call them spores. This spore is so light that it is easily wafted by the wind. If it falls upon the leaves or stalks of the potato and the air is moist, the motion of the hairs becomes slower, finally ceases in about half an hour and then disappears.

"Then the spore begins to change shape, and soon a thread-like branch protrudes from its side. This is the beginning of the mycelium, which then pushes through the cuticle in the manner already described, and commences its career of devastation. If the atmosphere is favorable the blight rapidly extends; the leaves die; the stalks become blighted. Fresh spores are continually produced. Some fall to the ground and are carried through the soil by water, and lodge on the potato, where they germinate, and the mycelium penetrates the tuber causing it to rot. The mycelium will grow rapidly in the tuber under ground, but the fruiting branches only grow above ground, on the tops or leaves, where they can get light.

"Some varieties of potatoes are more liable to this disease than others, but no variety is known that is exempt from it. We possess no cure for the potato disease, because we know of no means of economically killing the fungus without destroying or injuring the tuber. The practical farmer can check its ravages, however, even if he cannot cure the disease.

"1. Plant only sound potatoes, for every diseased potato is a source of fresh fungi.

"2. Either plant deep or else hill up the potato very high early during the growth. It is often found that tubers lying near the surface decay, while those that lie deeper escape. The reason is obvious. The spores from the surface do not reach those deeper buried so easily as they do those near the surface.

"3. Mowing off the tops of the potatoes when the blight appears, has, in many cases, saved the tubers.

"4. A French gardener proposes pressing over the top with a roller, so that the spores fall into the furrows between the hills, and are washed into the soil in that place away from the tubers.

"5. Certain English farmers recommend laying off the potato tops on either side, half right and half left, along the rows, and throwing dirt upon the ridge, over the stems and roots.

"6. Professor Bollman, of St. Petersburg, proposes to cut the tubers, and dry them by artificial heat until they are well shrunken.

"7. Mr. Holland, of Sussex, England, strips off the leaves as soon as they show signs of the blight, and cuts away the diseased stems, and also hills up the rows higher, beginning indeed by planting on a ridge."

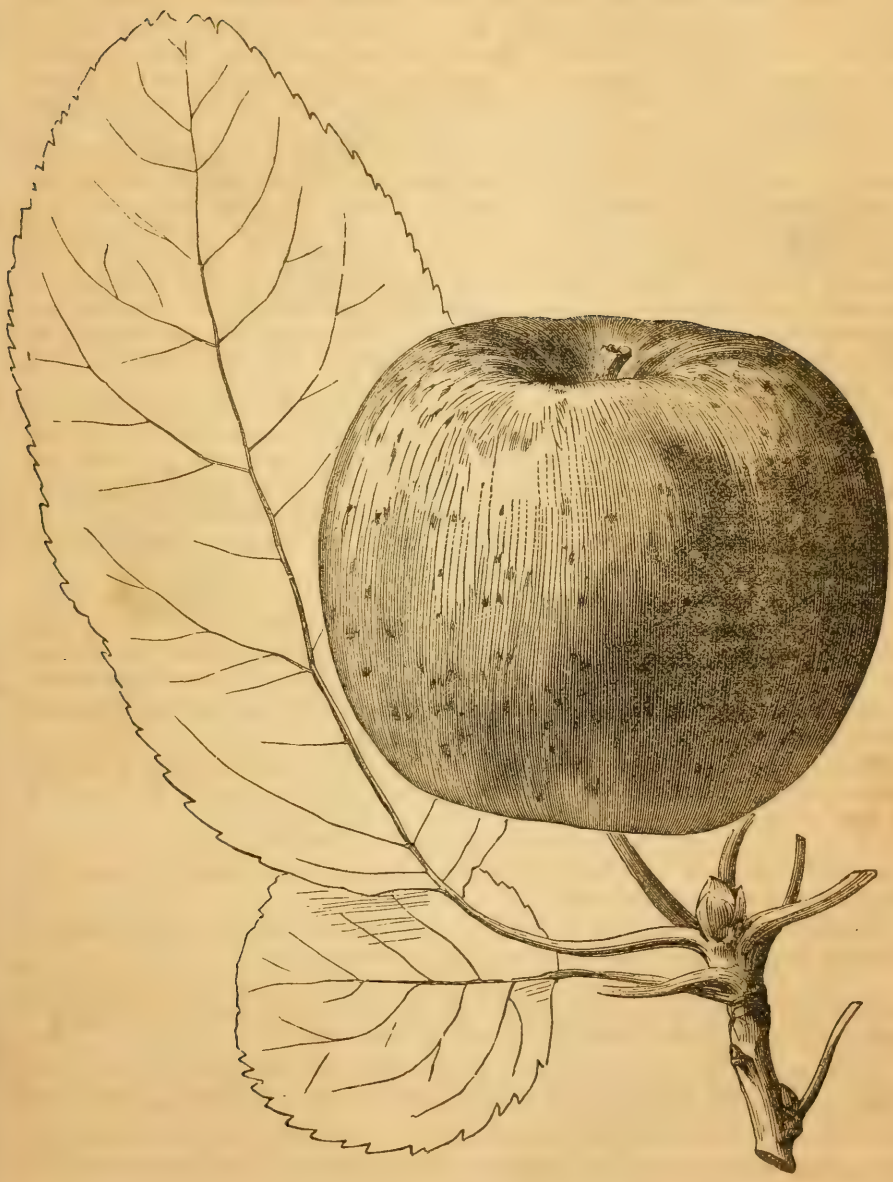
As the season for potato planting draws nigh, the foregoing extract from Professor Brown's lecture before Connecticut Board of Agriculture, 1866, will be of interest to those engaged in this culture. For several seasons past the potato has suffered from this disease. The trial of the remedies may not entirely cure it, but lessen its ravages.

Will you publish the above, and oblige,

Yours, very respectfully,

M. G. VARDELL.

The Rasche Apple.



This is a new variety, originating in Missouri, with Mr. W. Rasche. The tree is said to be a strong grower, productive and hardy, and the fruit juicy, mild, sub-acid, rich and high flavored.

The Archduke Cherry.

This is the best of the Duke cherries, and should be more widely disseminated wherever the cherry will succeed, which, unfortunately, is not generally in the South. It is very erect and upright in habit of growth, vigorous and hardy. The fruit is large, very dark shining red; flesh, light red, slightly adhering to the pit; sub-acid, rich and very good. Considered very valuable in the West and Southwest.

TWELVE quarts of soot in a hogshead of water, will make a powerful liquid manure, which will improve the growth of flowers, vegetables or root crops. In either a liquid or solid state, it makes an excellent top-dressing for grass or other cereal crops.

How to Plant a Tree.

In transplanting trees, much depends upon the knowledge and skill exercised. Thousands of fine trees are lost every year through the ignorance and carelessness of transplanters.

In taking up a tree or shrub for transplanting, be careful to injure the roots as little as possible. But in all cases the roots will be maimed more or less. The feeding power of the tree is to the same extent decreased, and it will not be able to sustain the draft made upon it by the stem and leaves. These must be diminished correspondingly by heading back or shortening. In preparing a place for the reception of the tree, avoid, if possible, the sites of old trees. Dig a hole considerably larger than the clump of the tree's roots, and from fifteen to twenty inches deep, placing the sods, if in sward land, in one heap, the soil in another, and the subsoil in a third. The hole should be filled with a mixture of the soil, subsoil, and rich, black loam, and a little well-rotted compost manure, containing wood-ashes and lime, to the height where it is proper to place the tree, which should be no deeper than it grew in the nursery. With the hand or spade shape the soil for the roots into the form of a little cone, on which to set the hollow in the centre of the clump of roots. If this is done some weeks, or even months, before setting the tree, it will be all the better. Avoid stable manure, at the time of planting.

If the ground be dry, or if the roots have been much exposed to the air since the tree was taken up, soak the roots and the lower part of the trunk in water twelve or twenty-four hours. Cut off all bruised and broken ends of roots smoothly with a knife, and shorten in the longest, so that the clump of roots may have a somewhat circular form. In cutting a root, always enter the knife upon the under side, and bring it out with a slope, to the upper side, so that the fibres which may shoot out from the edges of the cut shall strike downward into the ground, instead of upward, as they would were the cut made as it commonly is.

With good, rich soil fill up under, among, around, and above the roots, straightening them out with the fingers, and placing them in a fan-like and natural position, being very cautious not to leave any, even small, hollow places among them. If the root is one-sided, make the most you can of the weaker part.

At this stage of the process, a bucket of water is desirable to pour about the roots; but the watering, if the roots be fresh, is not essential, except in the case of evergreens. Next, put in a little more earth, pressing it around the tree with the foot. After this, throw on an inch or so of loose earth, and the work is done.

A FAITHFUL following of a well-selected plan of general farming will always be followed by larger profits, at the close of a long series of years, than will the following of that system which attempts to change one speciality to another, as the prices of different products vary.

Department of Mining and the Mechanic Arts.

"Honor to Whom Honor is Due."

Nicholas W. Darrell and the First American-Built Locomotive.

Mr. Editor: In the November number of The Rural Carolinian, the just credit was given to Mr. Darrell, as being the engineer of the "Best Friend," the first American-built locomotive, which engine was brought out to this city in the latter part of 1830. The article was copied into the *Scientific American*. Subsequently in No. 23, of the same journal, appeared the following editorial:

"The first man who had charge of a locomotive in the United States, turns out to be not Nicholas W. Darrell, as stated on page 325, current volume, in an article copied from The Rural Carolinian, but John Degnon, 48 First street, New York. We had the pleasure of a call from Mr. Degnon a few days since, and he explained to us that he was the man who took charge of the "Best Friend" on its way to Charleston, and that he ran this locomotive three months or thereabouts, meanwhile giving Mr. Darrell the necessary instructions to qualify him for the post. The following year he executed a similar commission with a second locomotive. In proof of his statement, Mr. Degnon referred us to Horatio Allen, and other prominent engineers and manufacturers of this city. 'Honor to whom honor is due.'"

On seeing the above article, I made it my duty to call upon Mr. Darrell for the purpose of ascertaining who Mr. Degnon was, and if he had any recollection of him in the matter, but I was grieved to find Mr. Darrell in a dying state, and therefore, incapable of giving me the information. On the evening of December the 4th, he "yielded up his spirit to the God who gave it," and his body was attended to its last resting place by the entire force of officials and employees of the South Carolina Railroad Company and numerous friends, the workshops being closed as a token of respect for the first locomotive engineer. Unfortunately for Mr. Degnon, there is still another living witness in the person of Mr. Julius D. Petsch, who will speak for himself, fully vindicating Mr. Darrell's claim, which I am astonished the *Scientific American* should be so readily led to set aside. Mr. Petsch is, probably, the ablest mechanic in our country, and was connected as "Chief Superintendent" with the South Carolina Railroad under its most successful administration.

I would like to know upon what railroad Mr. Degnon gained his experience in those early days of railroads, to be enabled to teach any person in locomotive running?

JAMES M. EASON.

Charleston, 9th December, 1869.

J. M. Eason, Esq.

Dear Sir: I noticed your article in Rural Carolinian, in reference to Mr. N. W. Darrell being the first engineer of the locomotive "Best Friend," and fully substantiate what you have asserted.

I have subsequently seen an article in the *Scientific American*, in which Mr. Degnon claims being the first man who run the engine "Best Friend," and instructed Mr. Darrell for three months, which statement is entirely incorrect.

I will give you the history of the Best Friend in as few words as possible, and is as follows: Mr. E. L. Miller, who contracted with the South Carolina Canal and Railroad Company to furnish them with a locomotive suitable for their road, was behind time in its delivery. His excuse for being so was that he could get no one at that season of the year to come out South with the

engine, and as there was no one in Charleston competent to put the engine together, he was forced to delay the shipment of it until later in the season, when he would be able to bring a competent person with him to erect the same. The letter of Mr. Miller was at the time published in the daily papers of Charleston. He, however, brought the engine to Charleston without his competent man, and called on Mr. Thos. Dotterer to give him assistance in putting it on the road. I was at that time foreman of Mr. D.'s establishment, and was requested by him to undertake the job. I at first objected on account of Mr. Miller's published letter, but to please Mr. Dotterer, at last consented. I took Mr. Darrell who, like myself, had served his apprenticeship with Mr. Dotterer, and was just out of his time, to assist me. After erecting and putting the engine on road I ran it for three or four days, having Mr. Darrell with me all the time, and then turned her over to him as its engineer, in which capacity he continued until it exploded its boiler. I might mention that previous to its explosion, Mr. Dotterer had cast, and put under her, (under my superintendence,) a pair of new driving wheels in place of the original ones, which were made of wood, and which gave out after running about a week or ten days. The second engine was called the West Point, and was built at the establishment of that name in New York, where the Best Friend was also built. Mr. Darrell run the West Point while the Best Friend was being rebuilt. The third engine was the South Carolina, an eight wheel engine, built at the same establishment, on a plan furnished by Mr. Horatio Allen, chief engineer of the road, and was the first eight wheel engine ever built. *Mr. Degnon came out with that engine,* on the part of the West Point Company, and superintended its erection. After he left I gave her in charge of Mr. Darrell. So you will perceive that so far from Mr. Degnon running the "*Best Friend,*" and teaching Mr. Darrell, that he did not come to Charleston until after Mr. D. had run the Best Friend until her explosion, and had been transferred to the second engine, the West Point, and had run it for months. You are aware that from the time of putting *cast iron drivers* under Best Friend, until the completion of the road, I had charge of the machinery department of South Carolina Railroad. Mr. Horatio Allen and Mr. D. Arnold, his assistant, can vouch for the facts above stated.

You are welcome to make any use you may think proper of this communication, in vindicating Mr. Darrell's claim, the first locomotive runner on the South Carolina Canal and Railroad Company, which was in 1830.

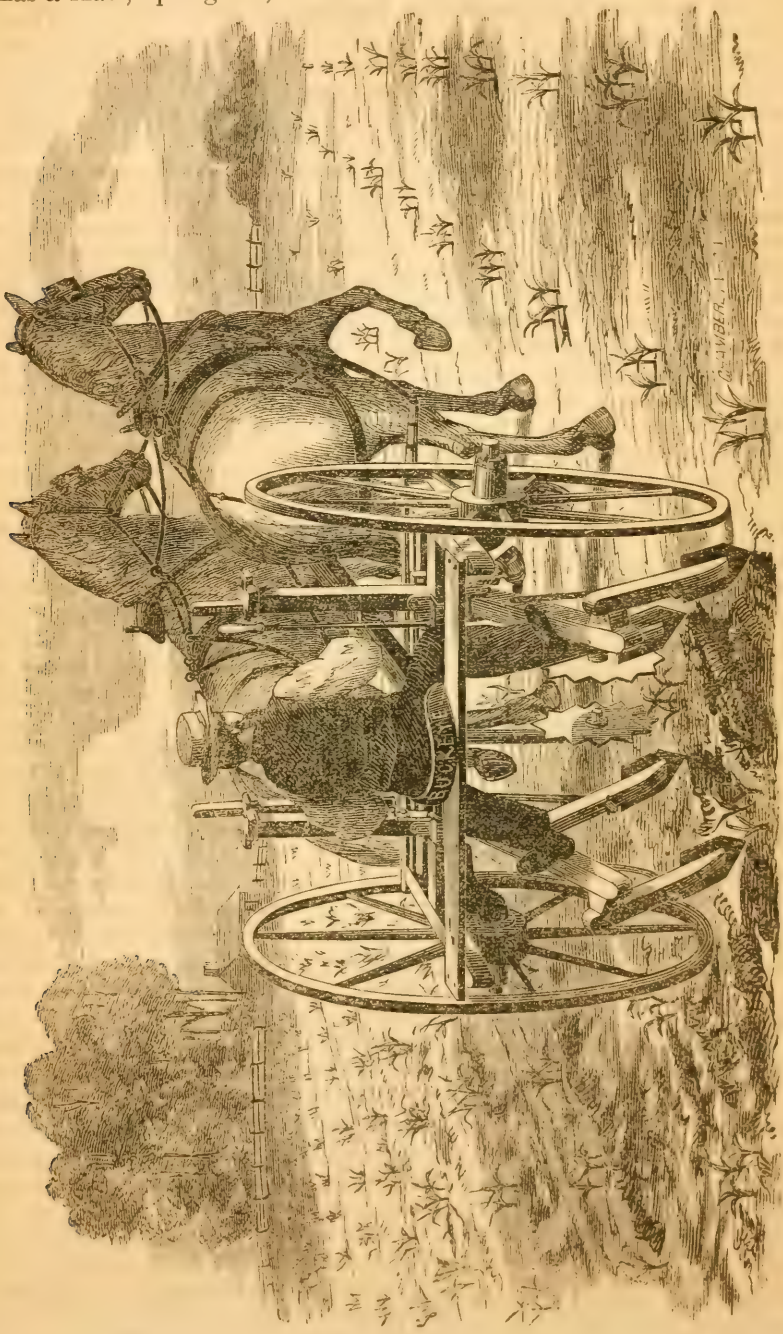
Yours truly, etc., J. D. PETSCH.

The Buckeye Sulky Cultivator.

We have faith in Sulky Cultivators. What particular implements are best, we are not prepared to say in advance of further experience. Perhaps none of them are exactly adapted to our purpose. If not we must invent better ones. It is a well established fact that the Sulky Cultivator saves the labor of one man, and at the same time performs the work much better than the old way of plowing with the single or double shovel plows, and it enables the aged and infirm to raise a crop of corn, who would not be able to endure the labor of trudging after the plow in the old way.

The Buckeye Sulky Cultivator, of which we present an engraved illustration, is recommended in the "Report on Improved Agricultural Implements," published in the Proceedings of the South Carolina State Agricultural Society, and though we have no personal experience in its use, we have no reason to doubt that it is a valuable implement. It claims a decided advantage over all

others in capacity for doing good work, ease of management, most and easiest changes, simplicity and general attractiveness. Manufactured by Thomas & Mast, Springfield, Ohio.



The Buckeye Sulky Cultivator.

THE RURAL CAROLINIAN.

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D. H. JACQUES, EDITOR.

BEGINNING ARIGHT.

We now enter upon a new year, and with it the planter, farmer and gardener commence the operations of a new agricultural season. Shall this season be made a successful one, or shall it add another to the list of our failures? To ensure the most complete success may not be within the cultivator's power, as the conditions on which it depends are not wholly within his control; but we fully believe that the unavoidable uncertainties connected with farming are no greater than those which attend most other branches of business. We cannot control the elements, but we can, in the main, guard against material damage from them. Whether we succeed or fail, therefore, will depend in a great measure upon ourselves—upon our mode of cultivation, and our business management. We make allowance for exceptional cases, but this is true as a rule.

We are reminded of the adage—"a bad beginning makes a good ending." Sometimes it does, because the initial error may stimulate to extraordinary exertions to overcome its ill effects; but generally, these effects are felt to the end, which is often disastrous.

1. It is important that we *begin* aright in our farming and gardening operations. Here lie our fields and gardens ready to be broken up. Here is the place, and now is the time to begin. They must be broken up in a proper manner. An error in this respect cannot easily be corrected. The right way is to *break up our land deeply*; but we must use judgment in this matter. It is difficult to lay down rules in regard to depth, but the sensible farmer will see the impropriety of turning his thin soil down so deep that the plant roots cannot reach it till late in the season, if at all, unless manure is to be liberally applied afterwards, and thoroughly incorporated with the new surface. Plow with the turn plow only a little deeper than there is good soil, exposing the subsoil in small quantities only to the action of the air, but *break up below this as deeply as you can with a subsoil plow.* A bull-tongue will do if you can get nothing better. Put in all the manure you can get. Next year you may plow the same field a little deeper, turning up another small portion of the subsoil. In this way, if you continue to accumulate vegetable matter on the surface, you will soon get a depth of soil, and arrive at a degree of productiveness that will astonish you.

2. Another consideration in the matter of beginning aright is the crops to be grown, and the proportion of each. Shall we plant cotton, (of course we shall! most readers will exclaim,) and if so, how many acres? Don't try to go over too much ground. Aim to make a big crop on a few acres, rather than a small crop on many. What kind of cotton shall we plant? Shall we try the short staple on the sea islands, and along the coast, instead of the black seed? We are inclined to advise this course, but may be wrong. In the interior, the Dickson variety, the Peeler, and other sorts will claim attention. We have given an article on this subject in another place. Similar questions will come up in regard to corn and other crops—Ramie, castor bean, broom corn, sorghum, etc. We hope in regard to all there will be a determination to plant no more than can be well manured and thoroughly cultivated; for—

3. Once more, there can be no beginning aright without *liberal manuring.* It is not economy to work an acre of unmanured land for a third of a bale of cotton, when the same labor bestowed on an acre well manured, will produce from one to two bales, to say nothing

of still greater quantities. A similar remark will apply to corn and other crops.

Let us begin aright with deep plowing, liberal manuring, a judicious diversity of crops, and a determination to make our cultivation more thorough than ever before, and our crops more abundant. A good beginning is the first step toward a good ending.

IMMIGRATION.

The International Land and Labor Agency, Birmingham, England, the object of which is to facilitate the settlement in the United States of English farmers, mechanics and laborers of all occupations, with a single eye to their own good and the equal good of both countries, seems to be a most praiseworthy enterprise, and one which should be encouraged by our people. English laborers of every occupation supplied to order by this agency, including skilled mechanics of any trade, gardeners, grooms, farm laborers, etc.; also governesses, female clerks and domestic servants, each with satisfactory recommendations as to character and ability. For further particulars, address J. M. Holmes, Secretary of International Land and Labor Agency, Birmingham, England.

Mr. F. W. Brüggeman writes from New York, that the prospect for securing a good class of German farm laborers is more favorable than heretofore, and that he can fill very many more orders in the most satisfactory way.

A colony of Swedes, selected in Sweden by Mr. W. J. Ferlove, lately arrived in this city on their way to their new home in Newberry. They were conducted to Pomaria by Rev. T. S. Boinest, the efficient President of the Immigration Society, who informed us that he should employ several of them on his own place. More are coming if these are suited.

OUR NEW SOCIETY.

We are glad to be able to report progress in the matter of organizing the Charleston County Agricultural and Horticultural Society. The canvassing committee who now have the matter in hand, are active, energetic men, and we trust they will meet with a cordial welcome and an earnest support from our citizens who are interested, as all should be, in the prosperity of our city and county.

There will be a meeting of the Society on the second Thursday of the present month, which we hope will be more fully attended than previous meetings have been.

One object of the Society will be the establishment of a Library and Reading Room, provided with all the standard works treating upon agriculture and kindred matters. Besides, the Society will employ every means in its power for the general advancement of the objects of its formation.

A SOUTHERN SUBSOIL PLOW.

Murfees Soil Pulverizer and Deep Tillage Plow is attracting the attention of those who have become convinced of the necessity of a deep breaking up of the soil. It is essentially a subsoil plow, but has attachments for opening furrows and for cultivating crops. It is well spoken off by such agriculturists as Colonel Ruffin, of the Southern *Planter and Farmer*, and Colonel French, of the *Farmer's Gazette*. We hope soon to be able to speak of it more positively from actual trial. In the meantime we bespeak for it on the part of our farmers a careful examination.

WRITE FOR YOUR MAGAZINE.

We want short, pithy, practical articles on all subjects interesting to farmers,—*facts and experience*, not theories. Opinions are of little interest. Experience is valuable. If you have made good crops,—better than your neighbor's whose soil is equally good,—tell us how you did it. How did you break up your ground? What manure did you use? What kind of seed did you plant? How did you work the crop? Tell your story in as few words as will do it, coming at once to the subject-matter, and stopping when you have said all that is essential.

CROWDED OUT.

Our contributors have been generous the present month, and several excellent articles intended for this number have been crowded

out. Contributors should bear in mind that we go to press soon after the middle of the month preceding the date, and that *articles received later than the fifteenth can seldom appear in the next number.*

THE STEAM PLOW IS COMING.

We learn from the Clarendon *Press* that two English gentlemen, have recently purchased the large "Bloom Hill" farm, formerly owned by that well known and worthy citizen of Clarendon, Capt. T. C. Richardson, where they anticipate farming on the English plan, and *intend using the steam plow.*

We also hear of other parties in the South who are contemplating the use of steam in agriculture. "Progress" is the word.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Breaking up the land for corn is now one of the principal operations on the farm. Let it be deeply and thoroughly done, but do not *turn over* the soil too deeply. A subsoil plow or bull-tongue should follow the turning plow. Avoid plowing when the land is too wet. See articles on plowing in this and previous numbers. Also "Corn Culture—Mr. Dickson's plan," in December number.

Ditching, *draining* and *fence making*, if not already finished, should be pushed to a termination at once.

Manure cannot be too liberally used. The work of preparing, buying and hauling it should continue.

Stock must continue to receive the best attention, if you wish effective work from your horses, mules and oxen, and profitable returns from the rest.

Make close calculations and do not try to accomplish too much, lest you fail to accomplish anything rightly.

GARDEN WORK.

Peas should be now planted, wherever the state of the ground will permit. See last month's work for directions.

Irish potatoes may be put in any time during the month. See article in December number. The Garnet Chili is highly spoken of here in the neighborhood of Charleston, as an early potato.

Beets may be planted here in the low country, (Charleston and southward.) Select ground, if possible, that is sufficiently rich from previous manuring, spade it very deeply, pulverize it well, and sow in rows twelve inches apart and one inch deep.

Onions for the main crop may be now put in. Have the ground very rich and finely pulverized. Cultivate those planted in previous months, but work them *very shallow*, and avoid earthing them up. The bulb should form mostly above ground.

Turnips, *cabbages* and *Kohl Rabi* may be sown during the month, where the weather is not too severe.

Lettuce, *radishes* and *spinach* must be sown for a succession. A little loose hay may be thrown over the plants in cold weather.

Of *carrots* and *parsnips* you may sow a few for an early crop. Prepare the ground as for beets.

Hot-beds should be got ready toward the last of this month for forwarding tomatoes, cucumbers, etc. See article on "Garden Crops—What to Plant," in Horticultural Department.

ORCHARD AND VINEYARD.

Fruit trees and *grape vines* must now be put out at once, in order that the roots may have time to get well established in their new location before the growing season commences. See directions in this and preceding numbers on the subject of fruit growing.

RURAL NOTES AND QUERIES.

SEND US QUESTIONS.—We are anxious to make this department one of the most useful in the Magazine—a depository of condensed useful information on rural subjects. If you need such information on any particular point, send in your query. If we cannot answer, we may, by its publication, call out some one who can. We also want answers and notes as well as queries, but they must be brief and to the point.

A NEW VARIETY OF COTTON.—Geo. D. Baker & Co., Selma, Ala., writing to us on business, add: "We enclose a specimen of a

new variety of cotton, having a *yellow bloom*, and raised by us. We think it hard to beat for an upland production." It is certainly of a very fine quality, and presents a singular appearance from the exceedingly bright green color of the down which covers the seed, being quite different from the dark yellowish green of the common varieties of upland cotton.

THICK PLANTING.—As a rule we plant too thickly, or rather we do not thin out severely enough; and this fault is particularly conspicuous in garden culture. There are a few plants, however, which may be crowded a little, not only without damage, but with absolute advantage. Garden peas furnish an example. They are seldom planted thickly enough. They should be planted in double rows, and the peas not more than from half an inch to an inch apart for the dwarf kinds, and from an inch to an inch and a half for the larger growing kinds. Carrots, especially the Early Horn, do well pretty thick in the row. Make the rows about a foot apart, and the roots will find themselves room.

FRUIT CULTURE.—1. What are the best varieties of summer, autumn and winter apples, for a succession, for market and for home consumption, in the coast region of South Carolina and Georgia?

2. What is your remedy for the peach borer?

3. The best and most suitable soils and manures for trees for this location? J. F.

1. The apple is too little cultivated in our low country to have determined what varieties are best. The experiment of apple-growing in this region remains to be tried. Red June, Horse, Aromatic Carolina Bachelor, Buncombe, Mangum, Nicajack, Shockley and Maverick's Sweet, are suggested as most likely to succeed.

2. Our remedy for the borer is to scrape away the soil from the collar of the tree, kill all the borers we can find, and then make a little cone of hard wood-ashes about the trunk where the soil has been removed.

3. The peach grows finely on our poorest sandy soils. The apple and the pear will do better on a stronger soil, composed partly of clay.

TRENCHING VINEYARDS.—M. M. We do not believe that trenching will pay in our sandy, porous soils. Deep ploughing and subsoiling will serve an excellent purpose in the preparation of the soil. Dig broad, shallow holes, scatter in them some vegetable mold from the woods or a light compost, some wood-ashes and a little bone dust or superphosphate of lime, but no stable manure. Your vineyard will need no further manuring till it commences to bear.

LICE ON CATTLE.—J. H. M. The following is a safe remedy for these vermin:

Stavesacre seeds, four ounces; white hellebore, one ounce. Boiled in a gallon of water until only two quarts remain. Apply with a brush to those places where the lice are seen.

PICKLES—CANNED FRUIT.—Why cannot pickles be profitably put up here in the South, where the cucumber can be grown so successfully? And why need we buy all our canned fruits at the North? OBSERVER.

It is said that the heat of the weather at the time the pickles must be put up causes them to spoil. We think, however, that difficulty may be overcome by means of cheaply constructed refrigerating buildings. In regard to fruits, Echo answers—Why? We shall no doubt do these things whenever we decide to take hold of the matter *in earnest* and *try*.

TOBACCO CULTURE.—A correspondent who has been trying tobacco culture, on a small scale, with ill success, asks for information on the subject. Will some experienced cultivator give us an article for our next number detailing the best mode of culture, harvesting and curing?

DR. CLOUD'S SYSTEM.—A correspondent writes from Fairfield Co. that he has tried Dr. Cloud's system of cotton planting, but did not arrive at Dr. Cloud's results, getting only 1,300 lbs. from five acres. He thinks Dr. Cloud's plan may do for Georgia, but will not work here.

SNAP BEANS.—"Market Gardener." New York is the best market for snap beans. They often sell as high as from five to six dollars per crate in May, but prices fall later in the season. They may average four dollars through the season.

PEACH TREES FROM CUTTINGS.—Will the peach grow from cuttings? Q. Q.

We can say nothing on this point from experience, but are inclined to think that,

under certain favoring conditions, peach tree cuttings of the previous season's growth may be made to take root. Has any one among our numerous horticultural readers tried it?

OATS, HOGS, LIME, ETC.—By way of information, we will say we cut *8,000* lbs. of Norway oats from *one acre* this year. It threshed out 50 bushels. We keep over 100 hogs, and raise our own meat. We prefer paying wages to hands. We use *lime* on our bottom lands to great advantage.

Selma, Ala. G. D. B. & Co.

THE CHINA TREE.—I am told that there is a comparatively new variety of the China tree, or Pride of India, which is more beautiful than the common one. Can you, Mr. Editor, tell me anything about it?

P. E. C.

The variety you probably refer to is known as the Umbrella, China Tree. Its habit of growth is widely different from the common sort, being much more symmetrical and graceful. Nurserymen who have it for sale should advertise it.

LITERARY NOTES.

We are inclined to think that it will avail little to urge our people (or any people) to sustain a paper or magazine simply because it is a home enterprise, irrespective of its merits. Literature, in its printed form, is subject to the laws of trade. Each publisher puts himself into competition with all others in his particular line of business, and must accept the results. If we wish the people of the South to patronize Southern magazines, we must give them at least as good magazines as they can get for the same money anywhere else. There is no other way, and there ought to be no other way. If we can send out from Charleston, New Orleans or Baltimore as ably edited, as well filled and as handsomely printed and illustrated periodicals as can be got from New York, Philadelphia or Boston, we have full faith that as these publications become known, they will be subscribed for in preference to those from abroad. Are we wrong? The *New Eclectic Magazine*, published by Turnbull & Murdoch, Baltimore, Md., comes up to the proper standard. There is not a better magazine of its kind published anywhere. Its original articles are of the highest order, its selections are made with excellent judgment and taste, and its moral tone is high and pure. If it be not liberally sustained, we believe it is because our people are not aware of its excellence.

——It always gives us pleasure to read a book, an essay or a newspaper article from the pen of a writer who is thoroughly and absolutely master of his subject; so when we took up "Pear Culture for Profit," by P. T. Quinn, we opened it with confidence that we should find valuable information in it, and we were not disappointed. Mr. Quinn has grown pears for profit—has reached results aimed at by the slow but sure method of practical experiment. He knows the way the thing can be done, and gives us the process, step by step, from the selection of the ground for the orchard, to the marketing of the crop. It is emphatically a good work. Tribune Association, New York, publishers.

—— "The Small Fruit Culturist," by Andrew S. Fuller, (New York, Orange, Judd & Co.,) is another practical work by a practical man, who has himself grown and experimented with all the fruit crops he professes to teach others how to grow.

—— S. E. Habersham, M. D., has written a useful little work entitled "Health and Profit as found in the Pine Hill Region of Georgia and South Carolina," which invalids, and especially those predisposed to consumption, as well as persons seeking a location for farming or manufacturing purposes, will do well to consult.

—— The *Eclectic Magazine* (E. R. Pelton, New York) is a caterer in the departments of foreign literature, science and art, of established and well-deserved reputation. We have found the last two numbers, which have just come to hand, uncommonly interesting.

—— Messrs. Wood & Hoolbrook, New York, have published a handsome illustrated volume, under the title of "A Winter in Florida," containing observations on the climate, soils, productions and attractions of the semi-tropical "Land of Flowers." It contains much information of interest and value to health and pleasure-seeker, as well as to the prospective settler. The engravings, which present some pleasant Florida scenes, are excellent, especially "The Home

of the Heron." The author, Mr. Ledyard Bill, writes well and draws mainly upon his own observations for his facts.

—— During its brief existence as a component part of the American Republic, California has made wonderful progress in the industrial arts, in commerce, in wealth and in all the conditions of modern civilization. Among other things she is building up a distinctive literature, fresh, racy, bold, expansive and full of her own robust vigor. It does not surprise us, therefore, to find the imprint of A. Roman & Co., San Francisco, on one of the best, if not unqualifiedly *the* best of all the American magazines, the *Overland Monthly*, of which the December number, now before us, is a fair specimen. It has two articles relating to China and the Chinese—"Tea Leaves," and "Old Lamps for New."

—— A remarkable book will be published early in the autumn by Mr. Newby, "The Autobiography of Edward Wortley Montagu," the only son of Lady Mary Wortley Montagu, whose career was perhaps one of the most extraordinary of any woman in the annals of England during the last 200 years.

—— The new poem, by Alfred Tennyson, announced, "The Quest of the Holy Grail," is only another of the Arthurean legends which will go to make up the Laureate's epic.

—— "Field, Forest and Garden Botany; a Simple Introduction to the Common Plants of the United States, east of the Mississippi, both Wild and Cultivated," is one of Prof. Gray's most useful books. New York, Ivison & Phinney.

—— One of the best literary and scientific periodicals in America (we might say in the world) is *Appletons' Journal*, published by the well known and everywhere respected firm of D. Appleton & Co., New York.

—— "*Nature*" is the unique and strikingly suggestive name of a new scientific weekly journal, announced by Macmillen & Co., New York (63 Bleecker street) and London.

—— It is estimated that there are about 8,000,000 horses in the United States at the present time.

SPIRIT OF THE RURAL PRESS.

——The *Carolina Farmer* discusses subsoil plowing, and gives the result of an experiment as follows:

"When preparing land for corn, we caused three furrows under each row of corn to be subsoiled by running a bull-tongue behind the turning plow, by that means securing a depth of nine inches of well pulverized earth beneath the growing crop. The result was that during the worst of the drouth in August the corn never twisted, and when the crop was gathered it was a fair one considering the character of the land, which was of very moderate fertility."

——The *Planter's Banner* says that pine-apples have been raised in Attakapas (La.) in the open air, by a little protection during winter. No attention has ever been paid to the cultivation of this fruit in that State.

——The Norfolk (Va.) *Journal* states that the receipts of peanuts in that city from the 1st of September, 1868, to the 1st of September, 1869, were 423,363 bushels, which, at $2 75 per bushel, would yield in money $1,264,248 25. The production of this article has greatly increased since the war, and is capable of a still greater increase.

——*Tilton's Journal of Horticulture* notices among the new vegetables of the year the Pear-shaped Blood Beet, which is said to be peculiarly sweet and tender.

——A writer in the *Journal of Agriculture* advocates the formation of a farmers' party, as a new element in the politics of the country. He claims that the farmers' interests are almost wholly ignored in the legislation of the country; that while they constitute a majority of the people, they have scarcely a representative in any of our States, or in the national government, and that the country is now governed by capitalists, importers, manufacturers, and the aspiring of the legal fraternity—a body of men that has no sympathy with farmers, and who never trouble themselves to inquire what would be to the advantage of the farmer. Is he not right?

——Dr. Swasey in his excellent magazine, the *Southern Horticulturist*, gives the following formula for making a compost for a pear orchard:

"Take one bbl. ground bone, or good superphosphate of lime, two bbls. unleached

hard wood-ashes, one bbl. unslacked lime, one sack salt, and two two-horse wagon loads of dry muck or rich leaf mould. Slake the lime with a saturated solution of the salt; make a bed with one load of the muck, eight or ten feet in diameter, upon this spread, in the order named, the lime, bone, ashes, salt; covering all with the remaining load of muck. Give the bed a good soaking with pond or rain water, this soaking to be repeated weekly, unless rains should render it unnecessary."

A good fertilizer for other crops besides the pear.

——*Hearth and Home* has the following true words in regard to progress in agriculture:

"No man believes but that the agriculture of the twentieth century will be as much in advance of the agriculture of the nineteenth as this is of the last. Bidding good-by to the costly and clumsy Old, and greeting the cheaper and better New, is a characteristic of this advancing age. Toward a better and grander future, when one hundred millions of people shall be fed where forty millions find little more than a bare subsistence now, our country is rapidly and inevitably tending."

——"When our people cultivate less land, and learn to plow deeper," (says the *Southern Argus*,) "then they will make more money. Using the subsoil plow on our lands, we will be prepared for dry weather. It is more the moisture that comes up from below than that which falls from above, that makes vegetation flourish. Now, the deeper we plow, and the more we subsoil, the greater is this quality of moisture rising from beneath the surface."

——The *Horticulturist* states that W. C. Flagg, of Alton, (Ill.,) grubs up his old or superannuated trees and burns the brush in the holes. According to the report of the Horticultural Society of that place, he has several hundred young apple trees planted in such holes, which, for vigor of growth and health of foliage, are equal to any grown on new land. The success is attributed both to burning the earth and to the ashes.

INDUSTRIAL ITEMS.

——The arrival, in Liverpool, from New York, of 4,075 bundles of palm (or palmetto) leaves, is noted in an English paper. These leaves are said to be the product of the dwarf palmetto, but the plant referred to is probably the saw palmetto, (*Sabal serrulata*,) really a dwarf, which covers a large portion of Florida, and extends into the lower districts of Georgia and South Carolina. If these leaves are found valuable, there is room here for a profitable trade, such as grown out of the sumac gathering in Maryland, Virginia and Tennessee. Let us keep our eyes open to the wonderful natural resources of our favored country.

——It has been found that Southern black oak bark makes one of the most useful and important dyestuffs now in use, for giving the ground colors to the finest and most costly fabrics made in colors in European print works. The most expensive colors are made from *flarim*, which is made from the extract of the black oak bark in the South. This *flarim* is worth a dollar a pound. One ton of quercitron, that is, black oak bark, yields 150 lbs. of *flarim*. A cord of black oak bark will yield a ton of ground quercitron, which, when properly ground and prepared, is worth $35 to $50 and $60, and sometimes as high as $80 per ton.

——E. M. Greeson, Americus, Ga., has invented a cotton thinning machine comprising an arrangement of a number of hoes or scrapers, at suitable intervals, in a row, suspended from a beam or frame, provided with guiding handles, and connected at right angles to another frame mounted adjustably on one wheel, to the front of which latter frame the animal is to be hitched for drawing the same across the rows of plants.

MERE MENTION.

—— Some of the most prolific cotton stalks we have ever had the good fortune to see, are now on exhibition at the office of THE RURAL CAROLINIAN. They are of the variety known as the "Dickson Cotton," and are from the plantation of David Dickson, of Oxford, Ga., the originator of the improved seed. A better recommendation of the seed than these densely covered stalks afford, though they suffered from a four months drouth, cannot well be imagined.

—— Florida oranges are noted for their

superior quality. Some fine specimens, for which we are indebted to that experienced grower, (and our correspondent,) William Edwards, Esq., of Micanopy, Fla., fully sustain the reputation of the Florida fruit, and are much admired. Mr. Edwards also grows the banana, and we hope he will tell our readers at an early day something about his mode of culture.

—— The Tampa (Fla.) people are rejoicing in watermelons, trout, bass and other early vegetables.

—— At a wheat fair, or exhibition, held at Athens, Ga., not long ago, wheat was shown which yielded from *thirty-five to forty-six bushels to the acre.*

—— The swamp lands of South Carolina comprise more than a million of acres of almost inexhaustible fertility, but now exhaling pestilence and death. The Governor recommends that the State set on foot a plan for their thorough drainage. This is a kind of "reconstruction" that the State needs.

—— We have, in the United States, not far from 35,000,000 sheep of all breeds, the Merino family predominating.

—— Now that so much attention is being directed to the use of cotton seed as feed for stock, for oil and for manure, every invention calculated to facilitate its employment and utilize all its parts, is of interest. Of this character is Shaw's cotton seed huller, manufactured by the Diamond Mill Manufacturing Company, Cincinnati, Ohio, which takes the seed just as it comes from the gin, and by one operation, hulls and separates it thoroughly, discharging the cleared kernels from one spout and the hulls from another.

—— A gentleman in Solano County, California, has lately shipped *nine tons* of dried figs, the produce of four acres, to San Francisco, where he sold them for $200 per ton, or $1,800 for the season's crop. What are we doing here in South Carolina, Georgia and Florida? Importing figs from the Mediterranean.

—— Brazil is the greatest producer of coffee. That known in the trade as Rio, is a Brazilian coffee. Of the 713,000,000 lbs. produced by the world, per annum, Brazil furnishes 400,000,000, or more than half of the whole.

Correspondence.

GOOD LANDS GIVEN AWAY.

The gentleman whose offer to donate lands in Beaufort County to actual settlers (white immigrants) is published in our December number, writes as follows:

Mr. Editor: I consider the land donation important if it prove as I hope, the beginning of a movement that may overthrow negro rule in our State, besides improving society, and getting some of the needed labor.

With regard to some of the lands to be donated at Springfield, I extract from a letter just received from Dr. T. N. G., and General Jno. N. M——. "Being near neighbors and well acquainted with these lands, we do pronounce them equal in quality to any in this vicinity for cotton, corn and provisions generally." They add that they know of "$600 having been made to the hand," but did not say that it was done with barbarous hoe culture, almost wholly without the plow, perhaps wholly with the hoe, excepting in making beds or ridges. They further say: "These lands are generally cleared and would give little trouble to put them in cultivation," and I will add that in twenty years that I have owned Springfield, I've never know a case of chill and fever there, and can refer to Mr. T. S. B., near Grahamville, as to the heathfulness of the place. Mr. B. was raised there.

As to the donations from the other place, which has been in possession of the writer's family ninety years or more, some of the lands to be donated are scarcely equalled in this county. Subscriber.

Grahamville, S. C.

We need only add that we fully believe these statements to be entirely correct, and that immigrants accepting the terms will be dealt with in good faith.

CLOVER AND TIMOTHY.

Editor of The Rural Carolinian:

A farmer friend in the State of New York, who lately sent me some clover and Timothy seed, accompanies the package with the following hints, which, coming from an experienced agriculturist, may be of service to others as well as to myself. S.

Dear Sir: I send you by steamer this week the seed that I spoke to you of, with two other kinds. By weight you will find about a bushel of clover and a bushel of Timothy, sufficient to seed an acre of land. My opinion of most of your land is that it is

worn out. If I am right, you had best harrow where you intend to sow, and not plow it; top-dress it as thick as you can, harrow, and then sow. Clover or Timothy do not grow in sandy or gravelly ground, nor in very wet or sour ground. Where potatoes have been growing for years, I think you will find clover and Timothy prosper best. That which I send in a two-pound bag is to be given a choice place by itself. It is the *Chili Clover*, not known in the North. Clover is the cheapest manure for a farm; and, if you find the Chili Clover grows well, I will send you, another year, sufficient to make a patch that will be useful to you. Next to the plowing in of clover to enrich land, sheep are the best. Thirty sheep enclosed for two seasons on fifteen acres, which was too poor to yield grass, brought out a fine crop of grass, the best on my farm. I prefer the native sheep, they stand the climate best. I think March the best time to sow. If the ground is very poor, the seed will not come up in any quantity till the second season.

Yours respectfully, M.

OXFORD, NOT SPARTA.

Mr. Editor: I notice an error in the last number of The Carolinian. The seed planted by the side of the Peeler was bought, *not* of Mr. D. (Sparta) Dickson, but of Mr. D. (*Oxford*) Dickson. "*Suum cuique tribuito.*" I wrote last season to Mr. D. (Sparta) Dickson for seed, but he wrote me "he could not get cars," etc. Please correct the error in your next number. I weighed every pound of Dickson as it was picked and put in gin-house. My experience with it was very different from that of a writer in *Cultivator* for December. It took 2,604 lbs. to make 500 lint. I *secured* a staple through my lint room door, which the negroes had entered for over a year, and it afterwards averaged 1,660 lbs. seed cotton to make 508 or 510 lbs. lint. Any planter can find the proportion in a few minutes with medical scales, and it never took over 84 bolls to make a pound.

Subscriber.

Grahamville, S. C.

—— Mr. Ville, a scientific Frenchman, has made over 500 careful experiments, the object being to show that certain mineral manures are more potent and less costly than ordinary farm composts and excrements.

A European letter-writer says of American girls in Europe: "I do not wish to undervalue English beauty, which is most satisfactory and enduring, and most of which will wash. But I confess that American beauty, from New York to New Orleans, has spoiled my eyes for any other. I fear you do not half appreciate them at home. Here they admire and envy them—that is, the men admire and the women envy. On the continent they rave about them. Half a dozen American girls send a whole German town distracted. It is not only their beauty and grace, but their will, spirit and happy audacity."

NOTICE.

The undersigned respectfully announce to the public that they have associated Col. D. Wyatt Aiken, of Abbeville, with them in the publication of The Rural Carolinian, which will in future be published under the name of Walker, Evans & Cogswell & D. Wyatt Aiken. All business communications will be addressed to Walker, Evans & Cogswell, Charleston, S. C., and editorial matter to the "Editor of Rural Carolinian." Col. D. Wyatt Aiken will devote his time to travelling through the Southern States gathering *practical information* from all sections for the benefit of our readers, enlisting correspondents, establishing agencies and extending our subscription list. We pledge ourselves to our subscribers to make our Magazine one of the best, if not the best, North or South.

WALKER, EVANS & COGSWELL.

TO THE PUBLIC.

Charleston, Dec. 29th, 1869.

This issue of The Rural Carolinian publishes the fact that I have become one of its owners. In thus uniting myself with the enterprising firm of Messrs. Walker, Evans & Cogswell, more than a single motive will of course be laid at my door; but chief amongst the inducements is the earnest desire to lend a helping hand to develop and publish the developments of the agricultural interests of our beloved South. Whatever of agricultural advantages I may have gained after a practical plantation experience of near

twenty years, shall be given to THE RURAL for the benefit of others. To assure success to this enterprise, we only ask our people to become what they should be—a reading people. If, as subscribers to THE RURAL, they are not remunerated, it shall be their fault and not ours.

With this guarantee of a mutual advantage, I, in the name of the owners of this journal, appeal to our people to subscribe, and assist in raising it to that place which it intends to claim—the chief agricultural paper in the South. We guarantee more than remuneration for the subscription money.

Respectfully,

D. WYATT AIKEN.

THE RURAL CAROLINIAN is clubbed with the following first-class newspapers, at the rates annexed:

	Daily	Tri-Weekly	Weekly
Rural Carolinian and Richmond (Va.) Dispatch	6 50	4 00 semi-w.	$3 00
Rural Carolinian and Augusta Constitutionalist	10 50	7 50	4 00
Rural Carolinian and Savannah News	10 50	6 50	3 00
Rural Carolinian and Macon Telegraph	10 50	5 00 semi-w.	4 00
Rural Carolinian and Columbus Sun	11 00		3 00
Rural Carolinian and Mobile Tribune	11 00		4 00
The Weekly Gleaner, Columbia, S. C.			4 00
Star and Southern Real Estate Advertiser, Marion C. H., S. C.			4 00
Christian Index, Atlanta, Geo.			5 00
Quitman Banner, Quitman, Geo.			4 00
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Gazette, Meridian.			4 00
Locomotive, Opelika, Ala		5 50 semi-w.	
The Scoober Spectator, Scoober, Miss.			4 00
Press and Messenger, Eatonton, Geo.			3 00
Banner of the South, Augusta			4 00

This list will be increased as we hear from other papers.

The following CLUB RATES are offered by the publishers:

6 Subscriptions		$10 00
10	"	16 00
20	"	30 00

Money remitted by mail in *registered letters*, or postoffice money orders, at our risk.

ADVERTISER'S DEPARTMENT.

The attention of advertisers is called to the superior advantages offered by THE RURAL CAROLINIAN as an advertising medium. With a circulation extending from Virginia to Texas, and with large and continuous additions, no other periodical affords greater opportunities for thoroughly advertising all things of interest to an agricultural people.

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	1 M.	3 M.	6 M.	12 M.
One page	$25	$60	$100	$150
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Quarter page	10	25	40	75
One column	15	40	60	100
Three-quarter column	12	30	50	90
Half column	10	25	40	75
Quarter column	6	13	24	40
Eighth column	4	10	15	20

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The Dignity of Agriculture.

The valley of Egypt, comprising an area of about one-fifth of that of South Carolina, was covered, in the days of Diodorus Siculus, with fifteen thousand cities and towns, containing a population of perhaps seven millions. The stupendous ruins which remain bear witness to the science, wealth and grandeur of that land of wonder, at a very early period and for many centuries. The capitol building at Mœris, for the accommodation of the government, consisted, according to Heroditus, of twelve vast halls, surrounded by three thousand chambers. The Egyptians had little, if any, commerce with other nations in early times, and all this amazing wealth and grandeur were due to agriculture alone. To regulate this first of arts, to stimulate industry, to cultivate the homely virtues, were the main ends of government and religion. Indeed, to the ancient Egyptians agriculture was religion. In that far-off, backward and abysm of time—the pre-historic age of man—this wise people had beyond all manner of question a knowledge of the true God. Him they symbolized, even as we do, under three aspects, personal persons, *i. e.*, masks or appearances; and their Phthar, Neith and Cneph, the most ancient trinity of oneness, corresponds to ours. Their wise priesthood long had a knowledge of symbolism, since lost to the world, and understood the true signification of all natural objects and operations. The sun in his heat typified God's love; in his light God's wisdom, and in his active, productive energy, the Spirit of Goodness. They beheld, in the universal cosmos, marriage as the primal principle underlying all things here and hereafter. The sun was masculine, as it is with us; the moon feminine. Descending into lower degrees, the water was masculine, the earth feminine. They spoke, as we do, of "Mother Earth," but with infinite difference. We use the word poetically; the Egyptians and the early Greeks, religiously and devoutly. Ceres, from which we derive our word *cereal*, was with the Greeks *Demeter* or *Gemeter*, that is, "Mother Earth" Isis came finally to be worshipped as the chief deity of Egypt, and the name is from *I-Si*, signifying fertility, in

the language of that country. To one people God's power was the most impressive quality, and they would symbolize Him as a *lion;* to another, His providence or far-seeingness, and they would give to Jove an *eagle.* But the goodness, beneficence and usefulness of the deity most profoundly impressed the devout minds of the ancient Egyptian priesthood, and they symbolized this quality or appearance or person of God under the form of that animal which is of all the most perfect form of charity or beneficence to man. With the bull they plowed their land and trod out the grain; and there is nothing of the cow in body or in operation which is not of use to man. The people, soon losing sight of the beautiful living parable, fell to worshipping the animal itself. Hence the worship of the calf by the children of Israel, which they had been taught in Egypt. Osiris was the masculine principle of use; Isis the feminine. Osiris was in the highest degree the sun; Isis, the moon. Osiris was Father Nile; Isis, Mother Earth, Mother Egypt. All their greater gods were but phases of the sun. When he touched the ecliptic, entering our hemisphere, the sun was Ammon, and a ram was sacrificed to him. Hence our sign of Aries at that point. As he ascended to the highest point, and exhibited his power, he was Horus and the lion.

At the autumnal equinox he became Serapis and died at the winter solstice. Then about Christmas the young god Harpocrates was born. If when the sun passed out of our hemisphere Isis wept for the death of Osiris, so, too, did Ceres or Demeter bewail the loss of her Proserpine, the germinating and fructifying principle. When Proserpine in spring came from the arms of Pluto and kissed his mother—when Osiris embraced his wife—the genial earth teemed with kindly fruitage. Still the earth had to be tilled by the hand of labor, and the wise priesthood made agriculture a worship of God. In all the operations of nature and of man, the great secret was revealed that they were but symbolical or parabolical of the mind and of the soul. The Kingdom of Heaven is as if a man should cast seed into the earth which brings forth first the blade, then the stalk; lastly, the full ear; and Divine Wisdom has likened the truths of His Word to seed planted in various soils, yielding sometimes no product, sometimes again producing an hundred-fold of grain. The tillage of the soil in all its operations, is but a series of beautiful parables of the tillage of the mind and soul of man. So full of dignity and sanctity was agriculture to the wisest of people, that the King of ancient Egypt, himself a priest, went forth from his palace after the annual subsidence of the Nile, accompanied by the priests, and laying his hand to the plow opened the first furrow of the year. In this way was it declared in the most solemn manner by the people that God and the State honored human labor, and that nothing was more sacred and dignified than tilling the soil and making bread for man.

Are we wiser? Is it more honorable and man-like for a youth to weigh out pennyworths of sugar, or to mix drugs, or to vex Richard Roe, or to walk the streets in curls and pomatum, than with bared arms to strike the

plowshare into the earth and add to the comfort of his people and the grandeur of his State? Let us thank God that slavery is done with, and the day for honoring manual labor is drawing nigh; and that, like the younger Cyrus, who led forth the Athenian exile to behold the fields tilled by his own hands, our young men may learn how noble and king-like a thing it is, and how sacred to work the earth.

WM. PINKNEY STARKE.

Improved Implements for the Farmer.

Continuing our illustrations of improved farm implements, we this month present two more labor-saving gang plows, which are at least worthy of careful trial here. Both have, in fact, been in use in South Carolina during the past year, and have given such satisfaction as to obtain for them the recommendation of the Committee on Improved Farm Implements of the South Carolina State Agricultural and Mechanical Society, as may be seen by reference to its published report. This fact alone will be sufficient to give them a claim upon the attention of our farmers. We hope they will be put to the severest tests, and if they prove really adapted to our wants, here in the South, we shall be glad to give them the advantage of any further good words they may merit.

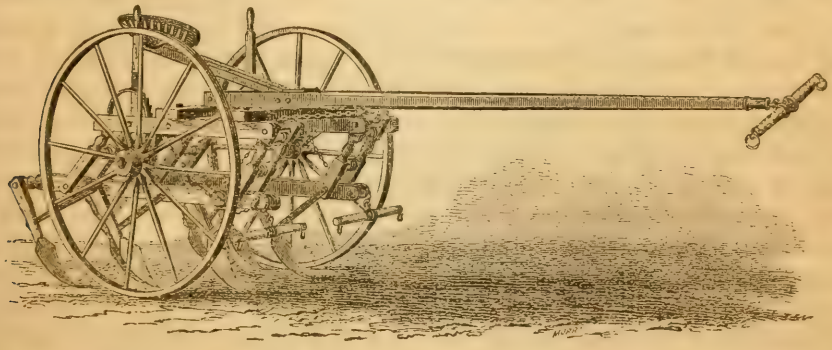


Fig. 1.—Two-Horse Cultivator.

The Two-Horse Cultivator (Fig. 1) is a very compact machine, in which it has been the aim of the inventor to embody all the essential features of such an implement in the least space possible, bringing the shovels as near the team as practicable, thus removing the objection so justly made against other implements of the kind, that the room required in turning materially lessened their value.

The tongue being pivoted on the front cross beam, so as to revolve freely, and supported at the back end by a roller resting on the rear cross beam over which the seat is fixed, permits the operator, by pushing with the feet against

the braces attached for that purpose, to guide the machine and follow crooked rows without changing the direction of the team, and also greatly facilitates turning around in a small space.

There being cultivators outside of the wheels it works its full width. It also cultivates all the ground between the rows by means of its double drag-beam and three shovels on each side.

Unlike cultivators having a permanent axle, keeping the wheels always at the same distance from each other, this is widened and narrowed at pleasure. By loosening the bolts connecting the wheel frames and cross bars together, the wheels and shovels may be moved in either direction and secured as wanted for the kind of work to be done. The wheels and shovels always work on the same ground. For this reason it is equally well adapted to cultivating corn in rows four feet apart, or potatoes two and a half feet. The shovels are so secured to the shanks, that by simply loosening a nut, they can be turned to throw the dirt to or from the row as desired.

A centre beam with additional shank and shovel, belongs with each cultivator, and can be put on or removed in a moment's time. With this attached it is a most thorough pulverizer of the soil, perfectly preparing the ground for seed and putting it in, in the best manner. It has been much used in spring and fall plowed land, on sod when turned over, and on summer fallow, with the most complete success.

These are some of the points of excellence claimed (and we think with justice) for this implement.

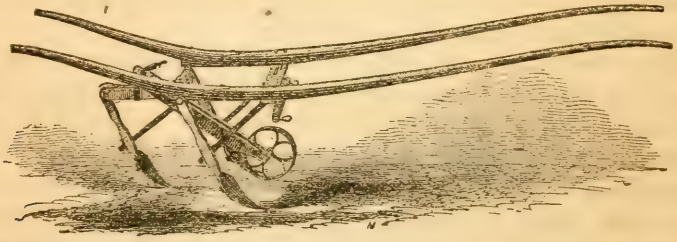


Fig. 2.—One-Horse Cultivator.

The One-Horse Cultivator (Fig. 2) embodies, as far as possible, the same principles and seems to be admirably adapted to its purpose. They are intended more particularly for the use of those who cannot afford or do not need the larger implement, and are adapted to rough and hilly as well as to smooth land. Both are manufactured by Ford & Howe, proprietors, at the Oneota Agricultural Works, Oneota, N. Y., from whom a descriptive pamphlet can be obtained.

Two quarts of hot water, one pound of Indian meal and a quarter of a pound of unbolted wheat flour, will make more eggs when fed warm to hens than twice the amount of whole grain.

Value of Science to the Farmer.

AN ADDRESS DELIVERED BEFORE THE ABBEVILLE AGRICULTURAL SOCIETY, BY DANIEL LEE, M. D.

LADIES AND GENTLEMEN: Southern agriculture has interested me exceedingly during the last twenty-five years, and in addressing you it is my purpose to state, in a concise manner, such facts as are deemed most worthy of public consideration.

Land being indestructible by the desolations of war, we have far more of it at this time than of perishable capital, or of farm labor for its proper cultivation. Hence arises the question, How can an owner of the soil obtain a comfortable and independent living with the least labor and capital outside of his land? Having my dwelling-house, barn and all other buildings, farm stock and fences destroyed during the siege of Knoxville, and before the close of the war, this has been to me not a speculation of the brain, but a serious toil of the hands and intellect working together. I have studied the natural laws and forces that govern the earth's fruitfulness and man's physical and physiological wants. A man with a little arable land can use no other capital that equals in productive power a knowledge of true science, applicable to all tillage and husbandry. While life lasts such intellectual capital cannot be destroyed. You will allow one who has felt the benefits of science when borne down by the pitiless scourge of fire and sword, to speak a word in its favor without vanity or any selfish purpose.

Thoughtful Science inquires, What material elements and what forces are available to the farmer, with small labor, in giving existence to his crops? It is obvious that some unseen force lifts immense quantities of water out of the Atlantic and Gulf, and distributes it in fertilizing rain and dew over all the Southern States. The luxuriant growth of forests, wild cane, sedge and grass in our soil and climate, proves that all the elements of organic life, and all the conditions for their happy development in great perfection, abound without any human labor. Too many farmers fail to see and comprehend the natural advantages which surround them. If we carefully observe how Nature produces most valuable plants, with no plowing nor hoeing nor tillage of any kind, and with no impoverishment of land, we may learn to follow her wise example in part, and feed and clothe ourselves and mankind at large in an easier and better way than is now generally practiced. In farming, I reason in this way: The same elements and forces that cover our Southern hills, mountains, valleys and plains with rich herbage, adapted to the support of animal life, may be directed to any agricultural purpose within the same range of conditions. The *conditions* of the elements of crops in the soil, subsoil, their parent rocks and in the atmosphere, and the force or forces, whether latent or active, that change these conditions and impart fruitfulness or barrenness to all fields, deserve our earnest study.

In many sections of the South grass grows spontaneously, while no other crop pays better than hay. In other parts, the light labor of saving grass seed, and scattering it over many acres, secures an excellent range for stock, and large profits in the breeding and rearing of fine cattle, horses and mules. So long as the Cotton States have a great deal more land than its owners can possibly plant, I see no reason why a part of this excess may not be devoted to grazing purposes. Our mild winters and cheap lands enable us to raise horses and mules for service in Northern cities and on Northern farms, cheaper than they can be grown under Northern conditions. Grant that it requires some capital to stock a farm with brood mares. By starting with female foals old enough to wean, which I have bought at from $25 to $35 a head, this young stock, eating nothing but very cheap grass, soon increase fourfold in value, and become the mothers of many colts.

In this way vital force in plants and animals, that costs nothing and *multiplies itself*, transforms crude earth, air and water into valuable property, by the wise direction of solar heat and Southern sunshine to the production of grass. It is solar heat that takes so much water out of the sea and gives the early and later rain. Seasons cost the farmer nothing; yet rain, dew and sunshine, properly utilized, will give us all kinds of herbage and farm stock with very little tillage or fencing. While it is necessary to keep grass out of growing cotton and corn, it is very profitable to help it to grow on our old fields and in woods pastures. Our agriculture is defective in not cultivating plants that grow at a low temperature, say from October till May, as well as those of a tropical nature which flourish from May till October. All agricultural power is precisely like a water-power, that pays best when turning the wheels of production the year round. During the cool months of fall, winter and spring, the European grasses grow best in our climate. From these one may easily obtain beef, mutton, wool, milk, butter and cheese at a large profit. In producing and selling off the farm any quantity of butter, the farmer parts with not a particle of any agricultural salt, such as ammonia, potash, sulphuric or phosphoric acid. Butter is nothing but air, leaving no ashes when burnt except the common salt put into it. Hence raising grass for all dairy purposes without plowing or breaking the sod, and selling nothing but organized air that costs nothing, one's land (pastures and meadows) is never washed, but steadily gains fertility. To counteract the very common error of impoverishing cultivated fields and landed estates, I shall take pains to state clearly some of the ways and means by which plant-food may be accumulated in the soil at a small expense.

A planter who makes a bale of cotton (500 lbs.) on an acre and sells it, sells very little of any earthy substance. About 493 lbs. of the 500 are carbon and the elements of water. There is enough carbon in the atmosphere to cover the earth several hundred feet thick with the carbon in cotton, in wood and mineral coal. The raw material of cotton being substantially air with its vapor, it is a good staple to raise for exportation, as one may easily put back into his soil twice as much of the elements of fertility as the

lint takes out. Adopt the principle of making *full restitution in kind* for all that the soil parts with by the results of tillage and the removal of crops, and one's land will improve rather than deteriorate by cultivation. The ash contained in lint (about one lb. in 100) is poor in phosphates as compared with that from cotton seed. Of assimilated nitrogen, lint has still less as compared with the seed of this plant. Lint used as manure would be about as good as pine sawdust, while cotton seed is worth ten times more, pound for pound. The wide difference in the value of the several constituents of crops, arises from the fact that some elements abound in nature, and are ever within the reach of growing plants, while others are scarce in an available form. The latter are, comparatively, expensive; the former cheap. The quantity of phosphoric acid consumed in making a crop of cotton is so small that it will pay to buy it, although it is expensive. Cotton seed should be hulled and the oil expressed before it is used as a fertilizer. Oil is valuable for many economical purposes, but not for manure.

To give you a clear idea of the art and science of fertilizing poor land with the greatest economy, your attention is called to the fact that common cowpen manure is hardly worth a dollar a ton of 2,000 lbs., while the same weight of Peruvian Guano now sells freely in Baltimore for ninety and ninety-five dollars, after a trial of this imported manure for twenty-five years. Do you fully comprehend the reasons *why* our home-made plant-food is worth on our own farms only the one hundreth part of the value per lb. of this Pacific manure? Does not the extreme low price of our cowpen stuff betray a wonderful lack of skill in making such a fertilizer as poor land really needs? Think of it. Imported manure is worth ninety dollars a load on our plantations, and home-made manure is worth about ninety cents! Why is it that reading and thinking farmers have made no progress in the production and use of stable manure for the last 3,000 years? In Massachusetts, the land of schools and of new ideas, Judge French (author of a valuable work on drainage, and first President of the State Agricultural College) says that ninety per cent. of the yard and stable manure used there is "water and sand." The labor of hauling into fields near or distant, and of pitching over twice such weighty and diluted plant-food should be avoided. Let the water be evaporated before it leaves the stable or cowpen; and in making any artificial fertilizer, let all carbon, oxygen and hydrogen be left out so far as is convenient. Although carbon, oxygen and hydrogen form some ninety-five parts in 100 of wheat and cotton seed, and still more of corn, they all grow best when manured with such substances as phosphoric, sulphuric and nitric acids, combined with potash, lime, magnesia and soda. One, two or three hundred pounds of these earthy salts would add nothing to a crop of wheat, corn or cotton per acre, if the organic matter in yard manure were essential to fertility. It is not essential, else one hundred pounds of land plaster could never produce three or four thousand pounds of clover more than would grow without it. A phosphate of lime as soluble as plaster, is often more effective in adding to a crop of hay, corn, wheat or cotton. Nearly one-half of the ash

of the seeds of these plants is phosphoric acid. This fact and its scarcity in the soil, gives you an inkling of the wide application and great value of South Carolina phosphates. Use these discretely with such agricultural salts as sea water yields, and you can make stable manure cheaper in the soil and on the ground than it can be hauled and spread by men and cattle. True, agricultural salts create fertilizers that did not before exist except in an elementary form. Nitrogen in the atmosphere is not a fertilizer, but in the shape of ammonia or other compounds, it gives to Peruvian Guano its peculiar value. Remove its assimilable nitrogen, and it sinks in value forty dollars a ton or more. Remove its assimilable phosphorus also, and what remains will not pay transportation from Peru to this country.

[*To be concluded in our next number.*]

Drouth, Climate, etc., in North Carolina.

We find an interesting letter, addressed to the Hon. Horace Capron, Commissioner of Agriculture at Washington, from the pen of Lardner Gibbon, Esq., of Charlotte, N. C., whom we take to be the son of J. H. Gibbon, Esq., formerly Superintendent of the United States Mint in that precinct. Of the crop of the year 1869 he speaks deplorably. He says:

CORN.

"Corn in the bottom land may average half the usual crop. On upland, many fields produced only one-third, and, in some locations, the yield was so small the stalks were cut for fodder. For every ten bushels of corn produced last year there may be four bushels raised this—therefore we are on less than half rations."

Of the climate of the region he makes the following statements, showing under what conditions of the seasons and the weather crops may be made or lost:

CLIMATE.

"In the month of June the sun evaporates copiously over the Gulf of Mexico. The clouds which form over that basin are moved by the southwest winds over the mountains of South Carolina. The farmer here looks in that direction for rain to make his crop. This year he looked in vain—it did not come. We do not receive much water in summer from the North Atlantic. This year what little wind we had from the ocean came from the east, but it brought very little moisture. 'The east wind bringeth a drouth, and is a burning wind.'

"When there is a wet summer here, the following winter is cold; snow falls. When the wind 'returns from whence it came,' there is stormy weather from the northeastern mountains; but when the warm atmosphere from the southwest fails to come up and battle with, and force back the cooler atmosphere in the northeast, the probabilities are that the northern temperature will be more moderate and mild towards us in the winter."

CATTLE.

His opinion is, that even should the present winter be tempered by a warmer atmosphere, it will nevertheless be what is called a "raw winter," and what the English emphatically describe as a nasty one; and he recommends, accordingly, that cattle shall be well sheltered. "Raw cold," he asserts, chills the bone to the marrow; the nerve of the animal is seriously assailed, and this is highly injurious to life. He mentions the fact, that, in England, after a severe drouth, the farmers slaughtered large numbers of their cattle, apprehending that they could not sufficiently feed to preserve them. But in that particular instance it was proved that they had made a mistake, the winter being so mild that the cattle could and did find food for themselves. Keep your cattle in shelter, and warmth and protection from the "raw cold" and the piercing winds of the North, and they will be able to dispense with a large portion of the food which otherwise would be essential for their support.

HOGS AND BACON.

The scarcity of corn this year will necessarily produce a corresponding scarcity of bacon, especially as in such a season of drouth the hogs themselves suffer great diminution from the deficiency and inferiority of the mast. Mr. Gibbon describes the destructive effect upon the hogs from eating this crude, inferior and indigestible mast in its natural condition. He says:

"During the early fall of unripe fruits and nuts, the swine are attacked with cholera. This indigestible food, which the hogs pick up in the woods, chokes up the machinery, and in one night they roll over and die in great numbers; in some locations, at certain times, this seems to be their fate. There are a number of remedies practiced, some of which are tedious and troublesome. The best probably, and that which is generally at hand, is urine. They will take it from a trough. The animal is relieved of its pains, and moves ahead again."

We have no doubt that the best process for saving and feeding the hogs will be to gather and boil the mast, season it well with salt and lime, one or both, and feed it out in troughs, making it more or less thick, according to the condition of the animal.

SHEEP.

Of sheep-raising, Mr. Gibbon thinks with particular favor, and we concur with him fully, believing, as we do, that the policy of sheep-raising is more specially important on our old fields and sandy ridges than with him in North Carolina. In his country they will yield a thicker fleece; but, in our milder regions of South Carolina and Georgia, the more delicious meat. Sheep crop very closely, and they will find, on our sandy and waste tracts, certain fine grasses which are almost wholly imperceptible to the eye of the planter or grazier. He says of the sheep during the last trying season:

"They have stood the drouth well. The wool is more valuable now than ever, for the South has now become a woollen as well as a cotton manufacturing country. The principal obstruction to rearing large flocks of sheep in

this county, is owing to the absence of stringent State laws, which should protect the wool-growers. The habit of keeping on hand large numbers of dogs, makes it unsafe to keep sheep. The farmer cannot, under the circumstances, be expected to pay $1,000 for a ram or $200 per head for ewes. He has to confine himself to the common stock to be used up freely."

DESTROY THE DOGS.

"There are some very fine Southdown sheep here; but, for every one on hand, large numbers have been torn to pieces by dogs. These miserable, half-starved curs, are kept, it is said, to catch coons, opossoms or foxes. The meat of these wild animals is only liked by a few individuals. It is generally considered to be not only very coarse, but unwholesome food for man or beast. It costs as much to keep a dog as it does to keep a hog. There are many whites and blacks in this county whose families are supplied with the former, but none of the latter—yet they believe as little in the Old Testament as they do in the New. Those who work industriously in the field all day making bread, cannot live well if they pass the night in the woods after meat."

Alas! much of this is the general experience everywhere in the South. The discouragement to the planter and farmer, from the causes here enumerated, will not only keep them from the improvement of breeds and stocks throughout the country, but, if continued much longer, especially under the growing exactions of a *soi-disant* labor which will *not* work, must fatally and finally arrest all cultivation, and eventuate in the ruin of all parties.

We have already published sundry articles as well as items, eulogistic of the oxen as a work animal, for almost every department in the working of a farm. We need but refer to the excellent paper of the Hon. Mr. Hammond, on this subject, in a previous issue. But it is good policy to justify opinion by as many good witnesses as possible, and to enforce good doctrine by frequent iteration. Mr. Gibbon says emphatically:

OXEN.

"The power to increase the agricultural wealth of this county is to be found in well-broken oxen. 'Where there are no oxen, the crib is empty.' I have raised and trained two teams in six years—they are much less expensive than horses or mules, and will do their work. The horse or mule is easily abused—the ox takes care of himself; when tired, he walks slowly or lies down. He fattens on the grasses. A cow that has been in the habit of sleeping under a dry and warm shed during the night for six years, has presented me within this time with three heifers and a pair of oxen. Her sons, 'Jack' and 'Mr. Guppy,' haul a two-horse wagon loaded with corn from Marietta during sunlight, travelling a distance there and back of twenty miles. I attribute a great deal of their strength and remarkable endurance to the care taken of their mother, who has now a grandchild."

FRUITS.

Of the cultivation of our fruits, which have been more neglected in the South than all or any of our agricultural products, Mr. Gibbon makes the following statement, which will compel the eyes of thousands to open wide, who have been in the habit of looking to the North for fruits as well as seed. He is speaking more particularly of the peach:

"A dealer in agricultural seeds in Philadelphia, Penn., has applied to me for the peach seed of this county for the purpose of improving the culture of this fruit in the State of New Jersey. There is, probably, no part of the United States where the peach of this county is surpassed in flavor or essence of peach. No doubt the introduction of the seed of well-trained trees here would improve the orchards of New Jersey. He offers fifty cents per bushel. The peach season is prolonged by planting extra early, and a late kind which are ripening on the trees until heavy frost. I have about 300 young trees of the best quality, which are for distribution among those who wish to plant them."

The Self-Manuring Capacities of Soil.

The power possessed by soil of manuring itself from the air constitutes the real value of fallowing, and this has caused the introduction of mistaken theories, among which may be classed Jethro Tull's plan. This agriculturist had got hold of an idea, which was, that he could, by continually pulverizing the soil, render the particles so fine that they would pass through the pores of the roots and enter into the structure of the plant, and thus do away with the necessity of manuring. It is not necessary to point out here the absurdity of such a notion, as every one knows that the substances extracted by plants from the soil are in the form of fluid; but yet the practice which it gave rise to was in a great measure sound. He obtained crops without manure in the sense in which it is generally used, and yet not without manure in a scientific sense, for he manured his land from the atmosphere. The plan he adopted was to prepare the whole field by thoroughly digging and forking it. The wheat was then dibbled in, in rows of three together, each row being one foot apart; then a space of three feet was left without anything planted in it, and then three more rows, and so on. As soon as the wheat was up, the one-foot spaces between the rows were forked over repeatedly with a fork about six inches wide, so that it did not come nearer than three inches to the wheat, which destroyed all the weeds, and allowed the air to penetrate to the roots. The three-feet spaces were treated the same as fallows, and were thoroughly turned every way, and exposed to the air up to the time when the wheat met over the three-feet intervals. After the crop was cut, the three-feet fallowed spaces were dibbled with wheat, and the part which bore the wheat in its turn remained fallow.

This will show how necessary it is to subject land to a proper working, and that when persons hear the frequent admonition to drain, dig deep and often, and they neglect the injunction, they incur a more serious loss than they may at first imagine.

Lice on Animals.—The Massachusetts *Ploughman* pronounces suds from carbolic acid soaps, or "cresylic soap," the best application to be found for animals infested with lice.

Agricultural Societies and Fairs.

Mr. Editor: I am pleased to find The Rural Carolinian so far very interesting and instructive. And I am pleased with Mr. Malone's article in November number, starting inquiry as to the manner and value of granting premiums at our agricultural fairs. I think the custom may be altered for the better, and Mr. Malone's suggestion a good one. I have been a member of the Pendleton Agricultural Society for nearly or quite thirty years. During all which time we have had fairs, and once a fruit fair. And I may safely say that all the benefit the people of this county have derived, was in promoting kindly and friendly associations. The advantage to agriculture therefrom has been scarcely appreciable. The example set long ago, has now become a custom, which will be difficult to change I admit; still, let us reason about it.

The great change in our condition requires a corresponding change in our agricultural operations. Our wants are different. Once we wanted many acres, now a few will suffice. Once we had money or credit at command, now we have little of either. Once we had laborers that could be managed, now the same labor is almost unmanageable. Formerly our laws were made by our wisest men, and the people's interest consulted, now they are made by the unwise, though "cute," and their own interest consulted. And what is an anomaly in the history of the world, they who have no property are authorized to lay heavy taxes on those who have. Under these circumstances, as labor is neither reliable nor abundant, would it not be wise to curtail the acres heretofore cultivated, make what we cultivate richer, and diversify the products? It would seem to be both the interest and duty of the State Agricultural and Mechanical Society, to put their united wisdom to the task of finding out to what objects of culture the farmers and planters might be advantageously directed, and encourage, by suitable premiums, the trial of those objects. And the prime motive should be to encourage the cultivation of such articles as would afford a good profit with less labor, and at the same time improve the land, and also teach how to prepare the soil, and how best to cultivate them.

Now, how does offering premiums for the best half bushel of corn, wheat, oats, barley and the great variety of other things in the small, further or improve the great object above hinted at? And although this has been a time-honored custom, what progress has it made to any general improvement in agriculture? Dickson's letters, describing his mode of farming and planting so minutely that all may understand, giving his results so fully that all may profit by his wisdom and experience, have done more to excite a spirit of emulation among the cultivators of the soil in the South, and to increase production, than all the premiums for the last thirty years.

It is not my purpose, however, to object to fairs, but to change the plan by which they have heretofore been conducted, in a new direction. To turn their

direction to the root of all advancement. What is that root? Is it not the education of the farmer and planter in agricultural knowledge? Under the present condition of our people, how, you may ask, can this be done, and how can this education be encouraged by the Society? I answer, that agricultural chemistry, in all its branches that are applicable to agriculture, is the study, and is now the paramount demand to encourage progress. To teach the elements in the soil, that are food for the plants to be grown, the quantity of each of these elements each plant draws from the soil, and what from the air and water to bring it to perfection; and to teach the cheapest and most effective way to proceed to re-supply the soil with the elements taken up by the crop. As to how it may be done by the Society, I would suggest that the plan must be cheap enough to be within our crippled condition, and diffusive enough to take within educational influence grown up men as well as young men. To do this advantageously, the only plan I can suggest is for the society to employ a professor of chemistry, and let him lecture at stated times all over the State, free to all, on all subjects connected with agriculture, that can be elucidated by chemistry. To him grown up people would listen and learn. Young men would learn and start in life in the improved direction, and be cut loose from "*daddy's*" plan. Could not a salary be raised for this professor? I think so. I offer this only as a suggestion. Other and wiser heads may suggest a better. Any plan that promises to afford the information so very necesssary, I will gladly aid.

Then there are a diversity of plants, many of which are thought to be equally and some more valuable than corn and cotton. I instance the ramie, Cuba tobacco, olives, tea. Then there are many fruit trees, which, except for the planting and the ground they occupy, are of but little other cost, that yield an income in many situations very valuable, to wit, the apple, peach, pear, fig, Spanish chestnut, filbert, pecan, walnut, both black and English, the scaly-bark hickory nut and the Scuppernong and other varieties of grapes. Now, if the State Society would use their premiums to encourage the introduction and use of some, or all, of these fruits, what advance might be made in the general progress. Even a recommendation from a body of such intelligence and respectability would do good.

To bring this subject more prominently to view, I will subjoin a table:

An acre of apple trees planted 20x30 will be 70 trees.	*Bushels.*
Suppose 5 bushels to the tree—and some yield 40 bushels—5 will yield	350
An acre of peach trees planted 20x20—100 trees, at 5 bushels to the tree	500
" pears planted same distance—100 yield 5 bushels	500
" pecans, 30x30—49 trees yield 4 bushels	196
" walnuts " " "	196
	1,742

Besides Spanish chestnuts, English walnuts, almonds, figs, etc.

This makes an exhibit of 1,742 bushels of food for man and beast outside entirely of the cultivated crop. Its value I leave others to estimate.

Besides this there is the sugar business from sorghum and the beet, the oil

from cotton seed and palma-christi. And finally, and which is of paramount importance, is to encourage irrigation. In this lies the great secret of progress.

Gentlemen, you ask your subscribers to give you their thoughts, I have given you mine. R. F. SIMPSON.

How to Grow Tobacco.

1. Sowing.—The right preparation of the seed-beds is important. The best way is to spade up a bed in dry, rich ground with a southern exposure. If it can have a fence or a building on the north it will be all the better. Take *well-rotted* manure, (hog manure is best,) and spread evenly over the bed to the depth of two inches, and then, with a rake, mix it thoroughly with the surface of the soil. The whole must be pulverized till it is perfectly free from lumps.

For a bed one rod wide and two rods long, take a common-sized table-spoonful of seed and mix it with two quarts of wood-ashes or slaked lime, and sow the whole broadcast and as evenly as possible; then roll with a hand roller or press the ground with a board.

Another plan is to burn a large brush heap on any good new ground in the evening and the next morning dig up the ground, rake it over and sow the seed while the ground is warm. In either case, the surface of the ground must be kept constantly moist by watering frequently if necessary. The time of sowing is from January to March.

After the plants are up, scatter over them a compost of ashes, plaster, soot, common salt and flour of sulphur, which will not only invigorate them, but prevent the ravages of the fly.

2. Soil and Manuring.—A sandy loam containing lime is considered best for tobacco, but almost any good land, not too heavy with clay, will produce good crops. It must, however, be continually enriched, for tobacco is a most exhaustive crop. A good crop of clover turned in puts land that is good enough to produce clover in excellent condition for a crop of tobacco. Stable and hog manure are also suitable.

The land should be deeply plowed and thoroughly pulverized with the harrow. If the soil be light, it is well to pass a roller over it after the harrowing. In some way it must be made fine, like garden soil.

3. Transplanting.—When the plants have four leaves, or are about five inches high, they are fit for transplanting. The land must now be laid off with a one-horse plow as for corn, the rows running from north to south. The distance of the rows apart should depend partly upon the richness of the land, and partly upon the variety of tobacco to be grown, some varieties requiring more room than others. For Cuba, rows three feet apart, and the plants two feet apart in the row, will give enough space. Three and a half or four feet by three are not too much for the kinds generally grown.

For planting, choose a mild rain or a cloudy day. Wet the seed-bed thoroughly before taking up the plants. Take the largest plants first, and only as many as can be planted in half a day. Make a hole with the fingers or a trowel, insert the plant, press the earth about the roots, and the work is done. Set the plant no deeper than it stood in the seed-bed. If rainy or cloudy weather cannot be had, the plants should be set in the afternoon, and must be watered as soon as planted, and then shaded, by covering with dry leaves or straw. This may be necessary, even when planted in rainy weather, if it become hot immediately after.

4. Cultivation.—The ground must be kept free from weeds and in a good tilth, as for corn or cabbages, and the plants earthed up slightly, using the shovel plow or the cultivator and the hoe as often as is necessary. Generally three workings are required.

5. Worming.—When the leaves get about the size of a man's hand, the worms will generally begin to appear. Every plant must then be carefully examined every day, and all worms killed. They will generally be found on the under side of the leaf. Turkeys are a great help in the work of worm-killing.

6. Topping and Suckering.—Topping is the cutting off of the flower stalk, and must be done as soon as the seed-buds appear. With the flower stalk are taken off such leaves, if any, as the planter thinks will not mature. If it be decided that the plant is likely to ripen all the leaves, then the stalk is to be cut above them. To decide this requires experience and judgment.

Suckering is the taking off of the little branches which appear in the axils of the leaves. They will never be of any value, and, as they rob other portions of the plant of the nutriment essential to its development, they must be removed. This will be in order soon after the topping is completed.

Neither cultivation, topping nor suckering should be done when the plants are wet.

The harvesting and curing of the crop will make the subject of another article. In the meantime we solicit information from experienced cultivators.

Chemical Effects of Plowing.

Prof. Way, an agricultural chemist of some note, has discovered that soils not only possess the power of separating ammonia, but likewise other bases from their solutions, and they hold them after being so absorbed with great tenacity. Thus 100 grains of clay soil taken from the plastic clay formation of England, absorbed 1,050 grains of potash from a solution of caustic potash containing one per cent. of the alkali. It is interesting to observe that the liquid was not in this case filtered through the soil, but only left in contact with the cold solution for twelve hours.

Prof. Way has further shown that soils have the ability to separate the

alkaline bases from the acids with which they are combined. He found that when saline solutions were slowly filtered through soils five or six inches deep, the liquids which passed through were deprived of their alkaline bases, as potash, soda, ammonia and magnesia, and only the acids were to be found in combination with some other base. Thus when muriate of ammonia was filtered through the soil, the ammonia was removed and a corresponding quantity of lime, in combination with muriatic acid, was found in the filtered liquid. In the same way sulphate of potash was deprived of its base, and the liquid collected gave sulphate of lime on analysis.

Those soils which have the greatest amount of capillary porosity will condense the greatest amount of manurial substances on their internal surfaces; will retain them longest against the adverse solvent action of water, and will give them out most readily to the rootlets of the growing plant. A mass of adhesive clay will absorb but a very slight amount of available manure; but if this same mass is rendered friable by mechanical processes, its power of absorption is amazingly increased. In view of what has been stated, it is very clear that plowing land increases its fertility in one way, by increasing its porosity by pulverization.

Again, many manurial substances exist in the soil, which, being insoluble, exercise no action on the growth of plants, and contribute nothing to their nutrition; but by the slow, though regular action of the frosts and the rain, the air and the sunshine, insoluble and refractory compounds are reduced to a soluble state, which are appropriated and held on deposit by the soil to the credit of the next cultivated crop. This routine explains the well known fact that soils, which have been cropped to the very verge of barrenness, will recover their fertility if allowed to remain long enough under the action of climatic influences to saturate the soil with the necessary plant-food which they have unlocked from their chemical combinations, and given to the soil in a proper physical condition. These changes are brought about more rapidly when certain mechanical changes of condition are wrought upon the soil.

Carbonic acid is one of the most active of the agents employed in bringing the insoluble organic matter in the soil into that physical condition when they become available as plant-food; in order that this acid may be formed, it is essential that the carbonaceous matters on the soil should be brought into direct contact with the atmosphere from which they procure the oxygen necessary to convert them into carbonic acid. So long as stagnant water remains in the soil, or so long as in a dense or a very compact condition, it is impossible for the carbon in the soil to be converted into acid.

To Cure Blind Staggers.—The following cure for the "Blind Staggers," is said by General Hampton to be infallible, so says an exchange: "Measure a stick from the nostril to the inner corner of the eye so as not to have it too long; sharpen well, and run it up the nostril, twisting it around once or twice, so as to make the nose bleed freely, and it will give instant relief."

Preparing for Cotton.

The present month will witness, in portions of the cotton belt, the commencement of the work of preparing for the cotton crop. We hope due thought will be given to the matter, and the best possible beginning be made. The question should be asked, "What is the best mode of preparing the ground for this crop?" and when the best mode is found it should be followed, regardless of a little extra labor, care or expense which may be involved. It will be labor or money well invested.

Now that improvement is the order of the day, it is well to inquire if there be not room for improvement in cotton planting. We do not advocate rash innovations. A system is not necessarily bad because it is old, or good because new; but as our system of cotton-culture originated under a system of labor and plantation management, radically different from the one now prevailing, and at a time when there were fewer incentives to thought and invention in this direction, it is not unreasonable to suppose that it is less perfectly adapted to our present needs, than one that we are now prepared to devise and put into operation.

Dr. N. B. Cloud, David Dickson and others have made certain improvements in cotton-culture, and have demonstrated their utility. The matter should not rest here. Let others give their thought to it, and carry the improvement forward step by step, experimenting year by year, and reporting through the agricultural journals the results.

Cotton undoubtedly requires a deep, mellow bed. Is not the practice of many planters, who simply lap two furrows together, leaving for a foundation for the bed a strip of unbroken soil some six or eight inches wide, a very bad one? If good crops are grown in this way, as they undoubtedly sometimes are, would not better crops be secured by a more judicious method? We think so. Let a *furrow* always form the centre of the bed, and let this furrow be subsoiled if possible. Throw your side furrows upon this, and you secure a deep, soft bed for the roots of the plant.

On stubble, corn or fallow land, a good plan is to lay off the rows with a scooter, enlarge the furrow with a shovel plow, follow this with a subsoil plow, and then drag all weeds, stubble and trash into these furrows and cover by throwing two furrows together upon this trench with a two-horse plow.

Will it not pay to break out the middles at the first plowing? This may depend upon the condition of the soil. On lands that have not previously been thoroughly cultivated we think it should be done.

We advise the careful re-reading of our article in the October number of THE RURAL CAROLINIAN, in which Mr. David Dickson's system of cotton planting is detailed, though we do not recommend a slavish adherence to any man's method. What is best for Mr. Dickson may not, in all respects, be best for you. Improve upon it if you can. At any rate, make up your mind to make the best possible crop on such an area of land as you are prepared to liberally manure and properly cultivate.

Sorghum and its Culture.

For the past ten years I have grown successfully two varieties of sorghum cane, the Chinese and the Red-Top Imphee, or African cane. That it has been more remunerative than any other crop grown on my plantation, I have never questioned. But it is equally certain I have not produced the immense crops per acre usually spoken of by Western writers. From strong bottom land I have boiled 153 gallons per acre, though my usual average has been between fifty and sixty gallons per acre on thin, old land, unmanured.

My system of cane-culture is simple, and very similar to the culture of corn. Upon land that would yield ten bushels of corn, I lay off guide-rows for beds three and a half feet wide, and with a narrow shovel, or scooter and wing, plow out the land into shallow or low beds. If this work can be done to my liking, I prefer not touching the land until 1st April. As soon as the beds are formed, a short scooter opens a furrow in the middle of each bed. In this bed, seed are sprinkled with little care, thickly or scatteringly, as the supply affords. I often use a bushel to three acres, seed being plentiful, and as often as otherwise, many of the seeds failing to germinate. A one-horse harrow follows the hand that drills. This is planting seed after the old plan, which I have ever found to be the cheapest. At planting time, idle women and smart chaps can be hired to do this work by hand, and in an ordinary lifetime the wages would scarcely pay for a Whitner planter. Seed planted by the 10th April will grow off more vigorously after germinating than if planted in March.

When the small, insignificant looking plants are about three inches high, I run one furrow on each side with a twister, straight side to the plant; then follow immediately with the hoe, chopping hurredly through the cane the width of the hoe, and leaving from three to a dozen plants bunched together. This plowing and hoeing can be done very rapidly and carelessly, as the plants are tenacious of life, very hardy and thick enough to allow the larger portion of them to be covered up with the plow. I have at this stage of the crop, where the "stand" was irregular, simply chopped up a hoeful of plants at crowded spots and set out the plants by simply depositing the dirt from the hoe upon the bed where no plants are growing. With ordinary seasons such a transplanting is quite effectual.

As soon as this part of the crop can be again worked, say in a fortnight or three weeks, the beds or spaces between the rows of cane are plowed "out-and-out" with long, sharp and narrow scooters or bull-tongue plows. As soon after this plowing as the land is thoroughly soaked, all hands are turned upon the cane, and the crop thinned out by hand to one stalk in a place about ten inches apart. Should the seasons have been regular, the bunches or clusters of plants will have attained the height of ten or twelve inches, and, if left to grow still higher than this, they will not "sucker" half so readily as when thinned to a stand when quite young. After this thorough plowing, I seldom, if ever, again use the hoe, only giving the crop two or three sweep furrows

twice, perhaps three times, before laying by, much depending upon the seasons. If the plant suckers in its growth, I invariably pull them all off, but am aware that some of the most successful syrup-growers never draw off a sucker. I was taught to believe years ago, that *suckers* were not *succors*, and have never experimentally proved to which class the offshoots of the cane belonged.

After the crop is laid by, I wait for the Chinese seed to turn black and the African red, (but while both are soft,) before I begin topping and cutting for boiling. At this point begins the labor so distasteful to the freedmen.

Successful harvesting of a cane crop and boiling palatable syrup, is a work requiring much labor, system, patience, skill, energy and careful supervision. But few farms now-a-days in South Carolina, or perhaps elsewhere, employ together a sufficient number of hands to make this work easy. Hence extra labor must be hired, and untrained laborers are more profitless in this crop than elsewhere. To conduct the whole operation systematically, the hands should each be assigned a specific duty, and in the following proportion: six to pulling fodder; two to topping cane, cutting off the pompoon about a foot long; two cutting down the cane, each two rows at a time, and laying the cane as cut, butts together across each third bed; one hand follows gathering up the seed and throwing them in piles *on* the beds, for if thrown down in the water furrows they will be damaged by rain. According to distance, one or two wagons do the hauling, and I prefer two-horse wagons, for ordinarily they will accomplish as much work in a day as a four-horse wagon, especially if an extra hand is furnished the driver to assist in loading and unloading. At the mill, to secure good work, steam should be the motive power. Horse power is irregular, and cannot be applied in any way so as to compete successfully with a portable engine. One more hand is required for the engine, or the same as a driver for the mules; an intelligent, careful and vigilant hand should always be selected to feed the mill; one other hand to wheel off the "begasse," and where not more than one hundred gallons of syrup are made per day, two hands should be in constant attendance upon the pans or kettles.

Of the manner of boiling the juice, I can say but little satisfactory, perhaps, to others. Many writers upon the subject of syrup boiling advise defecating by precipitants, etc.; my habit has generally been to purify by allowing green juice to settle, and then while boiling to keep up a constant and untiring skimming. I have used four eighty-gallon shallow boilers, from which I made usually sixty gallons daily, and a Cook's Evaporator, warranted to make from 70 to 100 gallons daily, but from which I usually made about forty gallons by hand-work. I have ever been surprised at the reported success of other planters with this evaporator. With me it has proven itself a veritable humbug. I used a portable cast-iron furnace, with rollers, and an evaporator four by nine feet for four years, and the more I used it the less I liked it.

But more hereafter. D. WYATT AIKEN.

Rice Culture on River Lands.

Editor of The Rural Carolinian: In compliance with your request to write some account of the "culture of rice on the river lands," I shall endeavour to give, as you desire, a plain, "thoroughly practical" account of the method chiefly practised by me. It has been found successful and well suited to certain lands and circumstances.

I must allude, occasionally, to other methods, for there is much truth in the following sayings of an excellent planter: "Experience has convinced me that there cannot be uniformity in the mode of cultivating rice, even on the same plantation, for a consecutive series of years. System there must be, but that must yield to the tyranny of circumstances and seasons. The chief thing is to understand the peculiarities of the soil, its advantages as to flowing and draining, the grasses which infest it most, and whether of character to be best managed by water or hoe."

One great advantage of the method I shall describe more at large, is the saving of labour, now more important than ever. My own experience has been confined to the lands on Savannah River. Let me begin by mentioning some of their properties, that planters on lands unlike them may judge wherein their course may or must be different. These lands generally drain five feet; they are, in great part, level; they vary in character from stiff yellow clay to black light soil, with almost all grades of intermixture between these as extremes, and they can be flowed only at spring tides, (at new and full moon.) This last fact makes it necessary to arrange work accordingly, and prevents to some degree such nicety in the use of water as I have seen described. Still when I tell you that before the war an average product of sixty bushels per acre on some of these lands was not uncommon, you will agree with me that much accuracy can be attained.

Now if I were asked to specify any one thing in the preparation of land, upon which, above others, success depends, I would answer with emphasis *drainage*. I know very little practically of planting on lands draining less than four to five feet. I know not of what crops such are capable; but having reclaimed from a state of nature much land, of which, therefore, the thorough drainage could be only gradually accomplished, I have had opportunities of observing its effect in all stages of progress, and I would say that in proportion to its approach to perfection is the product both as to quality and quantity. I would not lay so much stress on what probably no one will deny, but that in what I have heard and read on rice-planting, while other points have been much descanted on, little, comparatively, has been said on

this one, and results not so directly attributed to it as it deserves. Unless the land is thus thoroughly sweetened, (it is the common word and very expressive,) the nourishment received by the plant is more or less poisoned, and, consequently, it must yield less grain, and that soft, dark and sometimes speckled. Moreover, good drainage contributes materially to the formation of an equable, well pulverized surface. In such land as I speak of, the principal or marginal ditches should be five feet deep; at top four to five feet wide, with proper slope to the bottom; the drains or smaller ditches within the field about three feet deep, eighteen inches wide, or two feet at the top when the land requires slope, and, generally, not more than fifty feet apart. I have been surprised, occasionally, at observing that while ditches themselves were well dug, much of the effect was lost by reason of unnoticed or neglected partial obstructions, such as a root or stump imperfectly cut, or a trunk in a bed too shallow, or some accidental cause. What has been said of drainage is, I think, of general application.

What follows has more particular reference to the ordinary course on a Savannah rice plantation.

There being much winter work, the effort is to send away the reaped crop as soon as possible. Consequently, since the general introduction of steam-driven mills for threshing, the old custom of collecting the crop in barn-yard has been abandoned. The rice, when cut and dried, is put up in small stacks at regular distances apart in the fields, and then transported in large flats directly to the mill, and threshed from the flats. The system of canals is so complete that every field touches one and often two, and they so communicate with each other that a flat may pass wholly by internal navigation to the mill; yet, by means of large floodgates that communication may be shut off at pleasure, as is often necessary when planting and cultivating the crop.

During threshing, the canals being kept full for navigation, it is well to throw water upon fields polluted with that mischievous intruder, volunteer or red rice, in order to make it sprout and so destroy it. But as soon as the crop is removed from the fields all water is turned off, that they may dry, the stubble die and be got rid of, and the work of preparation for another crop begin. Occasionally a field may be kept under water for the deposit, but only when so situated that it may be flowed without interfering with operations elsewhere. New ditches are dug, old ones deepened and cleared of all obstructions, banks repaired, trunks new laid and refitted.

The stubble is usually burned as soon as dry. I object to ploughing it in, because it is almost useless to do so unless when green, that is, very soon after harvest, but chiefly because it tends greatly to the increase of volunteer rice; whereas, by burning, much volunteer seed is destroyed.

Ploughing now begins, and the sooner the better, on account of the action of frost on the soil. A field much infested with volunteer may sometimes be advantageously left for late planting, and ploughed just before being planted and after the volunteer is up. I have heard ploughing objected to. I think the benefits greater than the evils attributed to it, even if well founded, which I doubt. Ploughing is followed by harrowing, repeated in

stiff land until it is well pulverized. These are the most important points in preparing.

Planting is done in trenches or drills, usually fourteen inches apart, *i. e.*, from middle to middle, and as shallow as possible. The best and most regular were made with the "trenching hoe," the labourer stepping backwards. I prefer a hoe three and a half to four inches wide, so that the trench may be wide enough to allow the grain to be scattered, which is better than what the old planters called "string-planting." It gives the plants more space for tillering, and admits freer circulation of air. The trenching plough saves labour, and probably under the new system will be extensively used. Trenching, sowing and covering can be all done at once by machines arranged for the purpose. I have seen them, but cannot speak from experience of them. The altered circumstances of the country will doubtless lead to their use, and, indeed, to the use of machinery in many more departments than formerly. My present business is to tell you *what* it is best to do—*how* that may best be done now-a-days we are in process of learning.

The dependence on spring tides for flowing, and the importance of so arranging as to divide labour by having one portion of the crop in dry growth while another is in water, renders it necessary to begin planting at a comparatively early period. When possible, it should begin with the first spring tides in March, never later than the second. In the early plantings, and in rough ground, two bushels and a peck are put to an acre; later in the season, two bushels. In selecting seed, regard should be had to the weight or freedom from light or imperfect grains, and also freedom from volunteer or red. I should warn the inexperienced against machine-threshed rice for seed, the least injury to the grain being fatal. When such must be used, a larger quantity should be sown.

The flowing of the field, the subsequent cultivation of the crop, etc., will form the subject of another article. J. J. PRINGLE SMITH.

The Action of Lime on Soils and Plants.

The action of lime is twofold; first physical, and second chemical. As a mechanical agent it opens stiff clays, rendering them friable, mellow and more easily worked; chemically, it acts upon the vegetable matter of the soil and sets free those stores of valuable substances which, without the action of this agent, must have remained inert and useless. It also enters directly into the composition of plants, and in many varieties forms a large proportion of the weight of their inorganic constituents. It neutralizes certain acids which are often present in soils, rendering them useful to vegetation instead of being positively injurious, which they are in their original state. The existence of water in the soil, however, affects the action of lime very considerably. If the land is wet and undrained, lime will not exert the same influence which it would do in the case of thoroughly drained land. A greater quantity of lime is necessary to produce a given effect, and thus the neglect of thorough drainage entails a considerable greater expenditure in liming, than would have been necessary, if the land was either naturally or artificially dry.

Department of Horticulture and Rural Art.

Climbers and their Appropriate Uses.

By the cottage porch, as well as the finished portico; by and in the rustic vase, as well as the marble fountain; everywhere that man seeks to decorate and adorn, do we find some variety of climbing vine. The showy and brilliant Tecoma, with its hundreds of scarlet trumpet-shaped flowers, attracts and commands admiration, to entire forgetfulness of the rude building which supports it; the light and airy woodbine,

> "That loves to hang on barren bows
> Her wreaths of remote flowery perfume,"

by its light, yet airy, negligent character, gives to the rustic porch an appearance of refinement, an impression that beneath its shelter there dwells a mind alive to the emblems and manifestations of God's love to man. Everywhere, in the wild wood, on the mountain, and by the river-side, in the green-house, and the flower parterre; decorative of the brow of science, and clinging around the tomb of departed friends; everywhere are found vines, and everywhere do they so harmonize with either nature or art, that no harsh lines or thoughts intrude when viewing them.

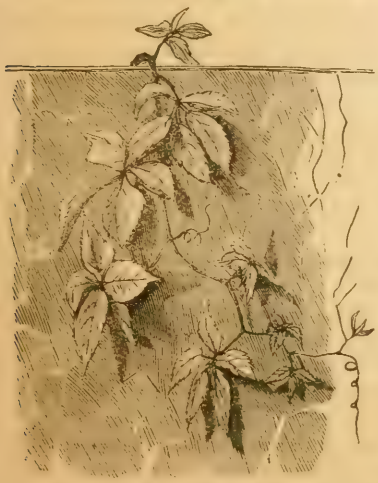


Fig. 1.—Ampelopsis.

In the formation of artifical rock-work, or over the edge of some bare yet needful excavation, a few vines relieve the want of taste or knowledge in the builder, or render what would be bare and harsh to the eye pleasing, if not romantically attractive. A few rocks, natural to the geological surface of the country, and thrown together void even of any taste and art, but covered with the Ampelopsis, or Virginian Creeper, will often give a better, more harmonious and pleasing effect than any construction, no matter how artistic, of curious stones, slag of glass-houses, and scoria from blast-furnaces. The last two are ugly in themselves, unpropitious to the growth of plants, and only belong where an in-door mineralogical rock-work museum is desired.

Among all the various vines and creepers, none possess such great luxuriance and beauty in foliage, more perfect hardiness or rapidity in growth, or so great a variety of colors and richness in autumn foliage, when it changes from a rich green to a mingling of scarlet orange, crimson and purple, as the Ampelopsis, or American Woodbine.

Next among our native vines we have the climbing Bittersweet, (*Celastrus,*) Fig. 2. It is more woody in its character, and admirably adapted to the

covering of rustic arbors, as its stems, as they grow and increase in size from year to year serve to sustain and prop up any decaying post or arch. Trained as a pillar on the point of a roadway or in the shrubbery, where its deep green and handsome foliage, followed by the orange-scarlet of its large clusters of seeds in autumn and early winter, makes it ever an object of beauty and attractiveness.

The *Tecoma*, or Trumpet Flower or Creeper, although of late years comparatively little used, because perhaps of its becoming so common, has claims for certain positions unequalled by any other vine. Like the Bittersweet, its stems assist in the support of decaying woodwork upon which it may cling, (Fig. 3,) while the great beauty and abundance of its trumpet-shaped orange-scarlet flowers in July and August, with its pinnate-shaped, glossy light green foliage, make it always a feature to which the eye turns in admiration of its splendor. For coverering unsightly fences, to shut from view some rude outbuilding, or trained upon the body of some old tree, there is no climber so easily procured or grown, and few that possess more desirable qualities.

Fig. 2.—American Bittersweet.

Fig. 3.—Trumpet Flower.

It is occasionally a little tender while young, and in some northern locations it is well to cover, or in some way protect it for the first two winters.

Contrasting strongly in habit, period and color of flowers with the last-named is the Wistaria, (Fig. 4,) of which there are several varieties, the best among them being the *Sinensis*, or Chinese Wistaria. This also has a woody stem, and when once established grows freely in almost any soil. It is a very rapid grower, shoots frequently, making a growth of twenty to thirty feet in a season, so that in half a dozen years one plant will cover the whole side of a house, and with its hundreds of racemes of bluish-purple, sweet-scented flowers in May and June, can be considered one of our most magnificent climbers. There is a variety with white flowers, and when two or more are to be planted, it should be used. For training upon an archi-

Fig. 4.—Wistaria.

Fig. 5.—Crimson Honeysuckle.

tectural portico, or an iron balcony or rail, it is admirably adapted.

The Honeysuckle (*Lonicera*) is a class of climbing vines of easy culture; all are beautiful in foliage and flower, and some varieties have very fragrant flowers, like the belgica and japonica. This latter (Fig. 5) has a slender stem or vine, with various colored flowers, very fragrant, and when not exposed too openly to the sun, retains its foliage all winter. It blooms freely from May to September, and is one most desirable of all the varieties. Grown and twined intermingled with the Wistaria, it adds much to the latter when in bloom. The orange-colored (Fig. 6) is a variety with which we do not often meet; but from its broad, dark, coarse foliage and orange-red flowers is highly ornamental for covering arbors, etc. The old scarlet flowering, or coral, is also another of the good ones among this family, of which all are beautiful and appropriate for rock-work, arbors, or masses in the shrubbery.—*Horticulturist.*

Fig. 6.—Orange-colored Honeysuckle.

Facts About Seeds.

If you separate the two lobes of a bean or other seed of a similar character, you will discover, pressed in between them at the undivided or stem end or side, a minute kernel or bud. This, though a mere point as it were, contains the rudiments of two leaves, united by a solid or undivided portion called, in the language of botany, the *radicle*, and constitutes an embryo plant, holding within itself all the elements of vegetable life. To develop this germ—to make from it a new plant, certain conditions are essential, and every person who plants seeds should know what these conditions are.

The conditions essential to germination are the presence of *moisture, warmth* and *oxygen gas.*

In the absence of moisture, no effect toward germination is produced by the presence of warmth and oxygen or any other gas. Moisture and oxygen gas without warmth are equally inefficient; and so are moisture and warmth in the absence of oxygen gas; for seeds will not germinate in a vacuum or in distilled or recently boiled water.

Moisture is necessary to soften and expand the various parts, to dissolve soluble matter, and to establish a sort of circulation. The embryo seems also to have the power of decomposing water; and it is probable that a portion of the oxygen required is obtained in this way. The rest must come from the air; for it is found that a communication with the atmosphere is absolutely essential to perfect germination. The effect of heat appears to be to set the vital principle in action, to expand the air in the numerous microscopic cavities of the seed, and to produce distension of all the organic parts. The degree of heat required varies with different species. The common chickweed will germinate at a temperature but little above the freezing-point, while the seeds of many tropical plants require a heat of from 90° to 110° (Fahrenheit) to call them into action. Wheat, rye and barley, will germinate at 44°.

The time required for germination varies with different species of plants. Much also depends upon the soil, climate and degree of moisture. Under favorable circumstances, wheat, rye, oats and millet will germinate in one day; bean, turnip, radish and mustard in three days; lettuce in four days; melon, cucumber, squash and pumpkin in five days; barley in seven; cabbage in ten; parsley in fifteen; almond, peach and peony in one year, and hawthorn in two years.

The time that seeds retain their vitality differs greatly in different species, but in all cases depends partly upon the degree in which they are excluded from the action of moisture and light. Kidney-beans, peas and carrot, parsnip and rhubarb seeds are, generally, considered as losing their vitality at the end of one year, but will generally germinate if properly kept when two years old.

The following table of the duration of the germinative power of seeds is

made on the authority of Peter Henderson, the celebrated gardener and seedsman:

Two Years.—Beans, Peas, Peppers, Carrots, Egg Plant, Okra, Salsify, Thyme and Sage.

Three Years.—Asparagus, Endive, Lettuce, Parsley, Spinach and Radish.

Four Years.—Cabbage, Broccoli, Cauliflower, Celery and Turnip.

From Five to Ten Years.—Beet, Cucumber, Melon, Pumpkin, Squash and Tomato.

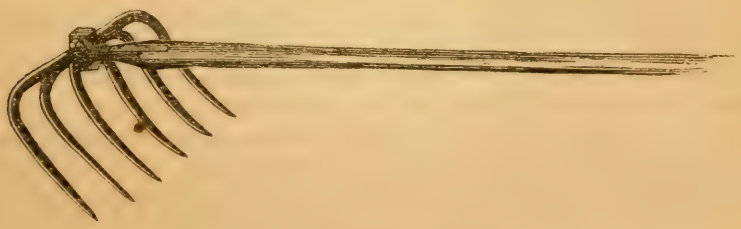
These facts have important bearings upon the subject of agriculture and horticulture, and should be constantly borne in mind; and especially is it requisite that the essential conditions of germination be held in remembrance. A failure to germinate is, doubtless, often attributed to bad seeds, when the fault is entirely in the planting. It must be perfectly evident that if your seeds are insufficiently covered in a light, dry soil, they will lack the first essential of germination, and will be liable to wither and perish for want of moisture. This is why light soils should be pressed together and upon the seed in planting, either by means of a roller or otherwise.

Seeds buried too deeply, or covered with a heavy, dense soil, pressed too closely upon them, fail to germinate for want of communication with the atmosphere. If there be not sufficient warmth in the soil at the time of planting, and it remain cold for a considerable time thereafter, the seeds just as surely perish. Remember the conditions of germination—moisture, warmth and oxygen gas, (or air containing oxygen.)

Useful Garden Implements.

In addition to the spade, the shovel, the rake and the common hoe, every one who plants a garden should have—

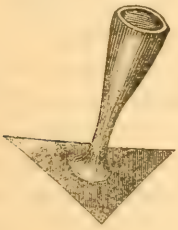
1. A Spading-Fork.—This implement has four flat tines, which should be made of steel, and very strong. In breaking up the garden, especially where the soil is stiff or rocky, it is far better than the ordinary spade. For loosening the earth and digging in manure, where the roots of plants are liable to be interfered with, it is indispensable.



The Pronged Hoe.

2. The Pronged Hoe.—This is closely related to the preceding in its use, and may almost supersede the common hoe in garden culture. We use it almost exclusively. For covering seeds, loosening the earth between the rows of plants and for killing weeds when they are small (and they never should be allowed to get large) it is an admirable implement. For digging potatoes it is almost indispensable. Our engraving represents an improvement on the common pronged hoe or potato digger, in which the tines are adjustable, but the ordinary four-pronged implement will answer a good purpose.

3. The Triangular Hoe is a very useful little implement in a garden, to be used in making drills for sowing seeds and for digging between close rows of plants.



The Triangular Hoe.

Dibbles.

4. The Garden Trowel should not be omitted, as it is almost indispensable in the work of transplanting. The Dibble, of which there are various forms, is almost equally essential. It may be made entirely of wood by the gardener himself.

Garden Trowels.

5. The Garden Line and Markers are necessary where anything like straight lines and parallel rows are to be aimed at.

6. A Watering-Pot, a pruning-knife, a small saw, (where there are fruit trees,) a garden syringe or engine, vine shields, hand glasses, etc., are also desirable.

An important item in the question of fruit-growing is the availability it gives to the labor of children—than which nothing is better for the boys and girls, if they do not have too much of it.

The Wild-Goose Plum.

This "King of Plums" is becoming so popular and so much sought after, that a description and history would most probably prove quite interesting to the numerous readers of your excellent journal.

History.—It originated near Nashville, Tenn., about fifty-one years ago. Mr. E. McCance shot a wild-goose and planted a plum seed found in its craw. The new seedling looked so promising that he permitted it to fruit, and the fruit was so much superior to any other known plum in the vicinity, that he took a pride in exhibiting it to a few friends; but not being engaged in propagating and selling fruits, it was some time before it passed into the hands of those who had the energy and skill to make it public. From that one tree, now standing where the seed was originally planted, hundreds and thousands have been propagated and sent abroad, everywhere giving entire satisfaction so far as known to the writer.

This simple incident ought to encourage fruit-growers generally to plant seeds, for it is from seeds chiefly that any new and valuable fruit originates. Thousands of ignorant persons imagine the propagator, by budding, grafting, splicing, or some other mysterious and unknown method, can change the quality, size, form and other characteristics of fruits in general. Yet it is well known to intelligent fruit-growers, that none of these processes in any way affect the characteristics of the fruit thus manipulated; hence, it is absolutely necessary to plant seeds, if we would originate new and better fruits. Let others do as E. McCance did, and thousands may have cause to rejoice.

Description.—The tree is a rapid grower, vigorous, healthy, hardy, and not only an early bearer but an enormously productive one, often breaking in pieces with its immense load of delicious fruit. It resembles the peach in its growth, having long and slender limbs, with but few thorns as compared with other plum trees.

It frequently attains the height of six or eight feet from the graft or bud in one year. It begins to bear the second and third year, and continues much longer than the peach, averaging twenty-five or thirty years, perhaps more; the original tree being in its fifty-first year, and having borne a crop this past summer, (1869.) It may be very readily multiplied by grafting, or budding on the roots of the common plum or peach, or on its own seedlings. It succeeds admirably on peach seedlings, and when thus grafted does not annoy the nursery-man with a number of suckers, nor injure the trees from their growth. It is, however, thus grafted, more subject to the attacks of the peach-borer. By planting very deep when on its own roots, or when grafted on peach seedlings, it throws up but few suckers, and putting out roots above its junction with the peach, it finally possesses its own roots. Like most other cultivated fruits it fails to reproduce itself, though thousands who ought to know better still believe that seedling trees yield the same fruit as their parents.

It blooms in the spring about the same time as the peach, and like it is liable to have its fruit buds killed by frosts. It ripens from the 5th to the 10th of June in this latitude, and continues in bearing for six weeks; the trees tend to overbear, and should be secured by props, or better, by thinning out the fruit.

The fruit is very large, averaging from three to five inches in circumference; is of a bright red to dark purple, when thoroughly ripe; is round, firm, juicy and sweet; will bear transportation for hundreds of miles, opening out in market as fresh and nice as if just plucked from the tree, especially if gathered a few days before fully ripe. It has the quality of ripening almost as well as if left on the tree, if gathered when just commencing to turn.

It is in great demand wherever known, and sells readily in market for the highest prices. It is used for plum-puddings, for pies, preserves, jellies, dessert and canning, having no superior in this respect. Its external covering is rather thick and tough, permitting handling and transporting without so much injury. It could be transported from California to New York without much injury. Large quantities were sent from middle Tennessee last June and July to various markets. A plum orchard, on a railroad, in the Southern States, would be found almost as profitable as one of peaches or of other small fruits; and this one, being superior to all others in size, quality, firmness, adaptabilily to transportation, early fruiting, long life, *freedom from curculio attacks*, etc., should be the one planted, to the exclusion of almost all others. The trees can be had at $25 to $50 per 100, and 120 will plant an acre, and this acre will pay better than ten or twenty in corn or cotton. There is an orchard in southwest Tennessee, eighteen years old, which the owner has made quite profitable. It will grow on thin soil, and will enable the owner to improve his land, and will also increase his amount of pork. Plums, peaches, peas, sweet potatoes and clover, would enable the South to make its own meat.

This plum is entitled to rank with such standard fruits as the Concord grape, at the North, the Scuppernong, at the South, and Wilson's Albany and Downer's Prolific Strawberries, standard fruits everywhere. Every Southern man, who owns an acre of ground, should plant a Wild-Goose Plum and a Scuppernong grape; and, if he owns several acres, let him put out early apples, early peaches, strawberries and other small fruits. By so doing, the South could send North its fruits for six weeks in advance, and thus reap a rich harvest, as early and late fruits always command extreme prices. Strawberries begin to pay the first year in plants, the second, in fruit; while the peach, plum and pear, bear the third; the fourth finds the Scuppernong commencing to fruit in earnest. More attention to fruits, less to cotton; more manufacturing, less purchasing anything that can be made at home; more clover, grasses and stock, will soon restore the South to its former wealth and greatness.

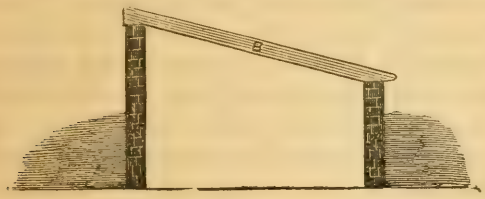
J. M. D. MILLER.

Iuka, Miss.

Garden Fixtures.

The gardens and grounds of every rural residence of taste should have seats, arbors and other structures of rustic work—that is, work made of the trunks and branches of trees, with their bark on and in their natural forms. They may be cheaply erected, and will add greatly to the out-of-door attractions. The tool-house may be of this character, and be made ornamental as well as useful.

A hot-bed is exceedingly convenient in all cases where sufficient attention can be given to it to keep it in an effective condition, but it requires continued watchfulness and care, or the main objects of the structure are frustrated, and the plants destroyed instead of forwarded.



A cold frame or sunk pit answers, to some extent, in our climate, the same purpose as the hot-bed, and requires comparatively little attention. It is made by excavating the earth, and forming walls of brick, stone or boards. These are sometimes covered with glass frames, and at other times with mats or boards. They are used for the preservation of vegetables, such as celery, endive, lettuce, cauliflower, and for protecting and forwarding plants during the winter and early spring. The *walled pit* is partly sunk in the ground and partly above it. The walls are formed of brick or stone, finished with a wooden or stone coping, and covered with movable glazed sashes. It should be two feet under ground and one foot above it in front, and two feet above it at the back, and six or seven feet wide in the clear. If filled with warm manure early in January or February, it will produce cucumbers that will be in use several weeks earlier than those started in the open air, or radishes and small salading in any quantity.

A mere wooden frame or bottomless box, like that used for a hot-bed, placed entirely above ground, can be substituted for the sunk and walled pit, and where the climate is very mild will prove of great service in forwarding plants in early spring by protecting them against frost.

An Experiment with Tomatoes.

Mr. Editor: With a view of testing for myself the earliness and other qualities of different varieties of tomatoes, I cultivated the following varieties, viz: The Early York, "Keyes' Prolific" and New York Market, besides some seed of my own selection. Beds like cotton-beds, five feet apart, were prepared in a rather poor old field, and, when the plants were ready, hills, about five feet apart on

the beds, were manured with about one handful of a manure composed of about equal parts of Peruvian Guano, Carolina Fertilizer, Alkaline Phosphate and ashes, and to each hill was also added about two double handsful of rather old cow droppings, all well incorporated in the bed before the plants were set. Owing to a mistake, I was not afterwards able to tell exactly which plants were the Early York and which the New York Market; but when they bore fruit, I found so little difference between them that I did not regret it. My own selection bore the most uniformly, although the fruit was rather small. I tried also the Crimson Cluster, but of a little later sowing. Of these the plants first set bore only tolerable, and were the first to die, but probably owing to having been set rather late. Some of the same plants, however, set out late for a fall crop, grew vigorously, and bore abundantly, but were caught by the frost while in full bearing. I think that is one of the best, if not quite the best, of all the varieties tried, as it is of handsome color, bears well and is free from hard core.

A few words as to my ideas and plan of cultivating tomatoes. I manure as highly as I can afford; a wheelbarrowful of stable manure per hill is, in my opinion, none too much. Set my plants according to the quantity of manure, when well manured, not less than five feet by five, and when very highly manured, I prefer seven feet by seven. I never put sticks or frames to the plants, because, although in a wet season a good many fruit will rot, yet, when allowed to run on the ground, the vines put out roots at the joints, and bear both more fruit and continue longer in bearing, sometimes until frost, as they did the past season, despite the great drouth, and I even gathered a good many green fruit off them at the last moment. However, I never depend upon the first plants continuing in bearing until frost, but plant successional crops until at least the month of June, and if these later plants are pulled up before being killed by a frost, and hung up in an outhouse or storeroom, the fruit will continue ripening until about Christmas, and even later, as it is only a few days since that I had my last tomato-sauce, (now Jan. 12.)

I give my experience with different varieties of this fruit, in order that others may avoid paying the extraordinary prices asked sometimes for new varieties; for instance, I notice a new variety now offered at $5 for twenty seeds, while a sufficiency of seeds of an older variety, probably quite as good for all purposes, can be obtained by mail for ten cents.

I notice in your list of good vegetables no mention of the Dales Hybrid or "Waite's Eclipse" Turnip, for I have purchased the same under both names, which I have found, not only the most productive, but also the most delicate tasted that I have ever cultivated; and, when well dressed, cannot be distinguished from cauliflower. R. CHISOLM.

Mr. C. W. Idell, of New York, an adept in the skilful management of grapes, sent lately to Glasgow, Scotland, several boxes of our native grapes, and they arrived in excellent order. Secret, good packing.

The Double Diadem Pink.

The Double Diadem Pink—(Dianthus Heddiwegii Diadematus fl. pl.)

This is one of the latest productions, belonging to the popular class known as China Pinks, (*Dianthus Sinensis.*) They are easily cultivated from seed,

sown early in the spring, which will produce flowering plants the first season. The following description was sent out with this variety last season:

"This novelty may be justly called a striking one. It differs from the *D. Heddiwegii* by its more luxuriant, but compacter and dwarfer growth, also by its foliage, but above all by its flowers, which have a diameter of from two to three inches. They are very regular and densely double, of varied tints, from lilac, crimson and purple to the deepest black-purple, having often a velvet-like radiant fire, impossible to be reproduced by the brush of any artist. Each petal is a marvel of beauty in its drawing and coloring; the outer edges are fringed or toothed and nearly white."

Owing to the high price of seed last season, but a very limited quantity was sent to the country; it is hoped, however, with the coming season, it may be more generally distributed. H. A. Dreer, who has furnished us the above beautiful illustration, will, no doubt, be able to supply the seed in season for sowing.

Plants which should be Better Known.

The Kohl Rabi.

With a climate and soils adapted to the growth of almost every vegetable production of the temperate zone, together with many of the most useful and beautiful plants of tropical and semi-tropical regions, we yet find in the Southern garden, as a rule, but a beggarly assortment of esculents. Cabbages, (generally in the form of "villanous long collards,") Turnips, Irish Potatoes, Peas, Snap Beans, Butter Beans, Melons, Cucumbers, Onions, Okra and Tomatoes, are perhaps almost universal. Squashes, (summer varieties,) Radishes, Lettuce, Peppers, Beets and Carrots are somewhat common; but when we have named these, we have nearly completed the list.

Asparagus, Cauliflower, Celery, Spinach, Rhubarb, the English Bean, Sugar Corn, Egg Plant or Guinea Squash are found in some gardens, and may be set down among the plants that most people know or have heard of, but which few are accustomed to grow.

Of fruits the list is still more meagre, consisting generally of the Peach, (a few indifferent seedlings,) the Wild or Chickasaw Plum and the Brown Fig; and even the last is often wanting. A few add the Horse Apple.

This is the condition of things in a country more highly favored, perhaps, than any other on the globe in the matter of climate and soil—a country

where the poorest man's garden might be made to furnish vegetables the year round, and of more than fifty different kinds; and fruits in untold abundance and of more than twenty species.

It is not our purpose here to make out a list of the plants that might be added to our ordinary garden crops, but to describe a *few*, in addition to those already named, that seem to us particularly deserving of more general cultivation. We shall speak of others from time to time as space and opportunity may permit.

1. *The Savoy Cabbage.*—The ordinary cabbage, when grown, as it readily can be, with a good, firm, solid head, is an excellent vegetable, but those who have once tasted the Savoy, which can just as easily be grown for family use, will hardly be willing thereafter to eat any other kind. The most delicate variety is the *Green Curled*, but the *Drumhead* grows larger and has a more solid head.

2. *Broccoli.*—This plant resembles the Cauliflower, but is not considered quite so delicate in flavor. Some of the white varieties can, however, hardly be distinguished from the true Cauliflower. The cultivation is similar to that of the cabbage, and it is considered less difficult to grow than the Cauliflower. Both are delicious vegetables and should be universally grown. The best varieties are the *Purple Cape* and *Early White French.*

3. *Portugal Cabbage*, (*Couve Tronchuda.*)—This is entirely distinct from the common cabbage, and of a peculiarly delicate and agreeable flavor. It is planted and treated like the common cabbage.

4. *Kohl Rabi.*—The Kohl Rabi is intermediate between the cabbage and the turnip. The bulb, which is formed entirely above ground, (see cut at the head of this aricle,) resembles a turnip in form, but combines the flavor of the turnip and the cabbage. The planting and treatment are similar to those of the cabbage, but in transplanting care must be taken not to set the plant too deep. We should as soon think of dispensing with the turnip or the cabbage as with this excellent vegetable. It is perfectly hardy here, needing no protection in winter, and it withstands the heat of summer better than either the turnip or the cabbage. While young the flesh is very delicate. When left to grow very large they are only fit for stock. It may be boiled, dressed and eaten with sauce, or with meat as turnips usually are. The *Early White Vienna* and *Early Purple Vienna* are the best sorts for the table.

5. *Turnip Rooted Chervil.*—A hardy biennial plant from the south of Europe. It has a root much like that of the parsnip, but does not ordinarily grow so large. The flesh is white, farinaceous, and of a flavor between that of a chestnut and a potato. It is eaten boiled. M. Vilmorin, of France, classes it with the Irish potato in value, and says that more than six tons have been grown to the acre. Sow in the fall, or in February or March.

6. *Salsify.*—Salsify, otherwise called Oyster Plant, is a vegetable with a long tapering root, which is mostly grated, made into small balls, covered with batter and fried like oysters, which they somewhat resemble in flavor. It is cultivated like the parsnip.

7. *Swiss Chard.*—This is a kind of beet, (*Beta Cicla,*) of which the leaves are the parts made use of. They are boiled as summer greens, and are very excellent. The tender stalk and the midribs of the leaves are also peeled and prepared like asparagus, for which they are a good substitute. The cultivation is the same as that of the common beet, except that the plants should be at least a foot apart.

8. *New Zealand Spinach.*—This is botanically quite a different plant from the common Spinach, it being a species of the *Tetragonia,* (*T. expansa,*) but is used in the same way. It has an advantage over the common Spinach in the fact that it may, if properly managed, be made to furnish greens through the whole season. It grows luxuriantly, and if the leading shoot be preserved will continue for a long time to produce leaves in abundance, which may be picked as required.

Seeds of all the plants we have named can be procured from most prominent seedsmen. We hope many will try one or more of them this season. Why should we confine ourselves to a few good things, when we can so easily supply ourselves with many?

Covering for Hot-Beds.

Mr. Editor: As the season for making hot-beds is near at hand, probably some of your readers would be glad to learn a very cheap and good manner of covering them, which is to tack common cheap cloth on suitable frames, then paint or oil them with the following preparation, viz:

Three pints best boiled linseed oil and four ounces white resin melted together, then add one ounce sugar of lead, rubbed up in a little of the oil. This, I believe, is about enough for five yards thin shirting. I take this receipt out of an old number of *The Horticulturist.*

This covering is not only much cheaper than glass, both in the frames and the covering, but it is also much better because, being opaque, there is no radiation of heat at night; therefore, tender plants are not so liable to be killed then, or so apt to be burnt by the rays of the sun during warm days. Frames thus covered, if carefully housed when no longer needed for use, ought to last for years.

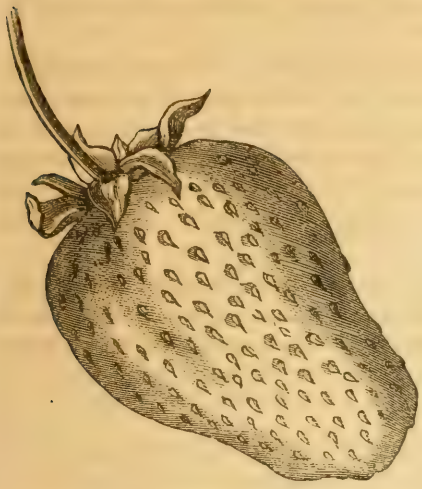
Persons unwilling to go to the expense and trouble of a hot-bed, can easily grow as many tomato, Guinea squash and other plants as would be needed for a family, by taking one or more boxes or flower barrels, cut in half, filling them with rich earth, sowing the seeds in them and then keeping it or them in a window exposed to the sun at least a part of the day. A window on the south would be best, but either east or west would answer, and a chamber would be better than a sitting-room, because likely to be warmer at night.

R.

New French Strawberries.

Messrs. Vilmorin, Andrieux & Co., Paris, have lately sent out a number of new varieties of the strawberry, originated by the late Dr. Nicaise, so widely known as a successful grower of this fruit.

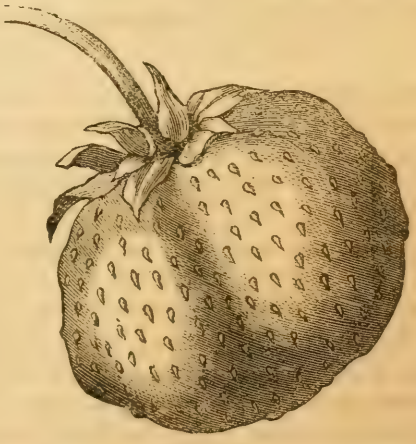
Among them three or four seem particularly worthy of attention, and may, like Triomph de Gand, prove suitable to our climate. We will mention at this time only the following:



Amazone.

AMAZONE.—Fruit large, of an elongated, conical form, which is almost always regular in outline; seeds not deeply embedded; skin of a light reddish color, with a tinge of vermilion on the top; flesh, white, inclining to rosy, sweet and very aromatic. The plant is vigorous in growth, of a medium height, hardy and prolific.

GABRIELLE.—Fruit medium-sized, round; seeds not very prominent; skin of a rather dark shining red; flesh, red, firm, very juicy, sweet and exquisitely flavored. The leaves of the plant are strong and straight, with nearly round leaflets on long, smooth and very stiff stalks. It is a hardy, prolific and very late variety, of great merit.



Gabrielle.

Propagating Plants from Root Cuttings.

This is not a new process by any means, but is little practiced except by nurserymen, who are generally content to keep among themselves the secret of so easy a means of multiplying plants.

Among the plants most readily propagated from root cuttings are the apple, the pear, the plum, the currant, the rose, the raspberry, the blackberry, the lilac, the wistaria and the spiræas. Some of these, however, require

either bottom heat in a green-house or a hot-bed, or some other equivalent preparatory process.

The blackberry and the European raspberry grow very readily from root cuttings, but the black-cap species is very uncertain. Better plants of the blackberry can be produced in this way than in any other. They may be dug up in November, December or January, divided into pieces of from two to four inches in length, and planted at once in a bed of light, well-manured soil. The bed should then be covered heavily with mulch, to be removed in the spring, when the plants will soon make their appearance.

Roots which do not grow so readily must be treated somewhat differently. This is Mr. Fuller's plan, which we have found perfectly suited to our purpose:

"When the cuttings are prepared, take a box and place a layer of damp moss, (such as used for packing plants,) about an inch thick in the bottom of the box, then put on a layer of cuttings, then moss, and so on in alternate layers until the box is full, then put the box in a warm cellar. From this time forward until spring all that is necessary is to keep the moss just moist, but not wet. If the cuttings should not have budded sufficiently at the approach of warm weather, take out the boxes and place them on the south side of a building or fence, where they will get the heat of the sun. Cover them with mats on cold nights."

In our climate the warm cellar is not essential. The boxes may stand in an outhouse, and kept well covered with hay or matting in cold weather. When the buds have become well developed, the roots may be planted.

Plants for Shady Situations.

There are many people who own city plots that are partially shaded, and they make this an excuse for not cultivating plants of any kind. But Nature teaches a different lesson, for she has spread her carpet, composed of the most gaudy colors, beneath the tall trees of our forests, where the direct rays of the sun never fall. Go where you will, beneath the perpetual verdure of a tropical forest or in the deep shade of the northern woods, and there you may find hundreds and thousands of plants that flourish in the shade. Nature has provided plants suitable for both sunlight and shadow, and we have only to make a selection of the most desirable kinds. Nearly all of the hardy species of holly, (*ilex*,) mahonia, dwarf yews, junipers, aeubas, berberis, do well in a half-shady border. Then there are many species and varieties of trailing evergreen plants, such as ivy, creeping myrtle, gualtheria, Mitchella, Epigæ or trailing arbutus; in fact, there is almost no end to the beautiful plants that may be successfully grown in a shady garden. The native ferns, as a class, are plants particularly adapted for such situations; and we do not know of anything in the shade range of ornamental gardening that will afford more pleasure to the possessor or produce a more pleasing sight than a well-arranged bed of our hardy ferns. A heap of stones, with the interstices filled with a light, pliable soil, is just the position for these most graceful and elegant plants. They are to be had in abundance everywhere in the country, and they cost nothing but the digging up and bringing to the city. Some species grow six or seven feet high, and others not more than two or three inches; therefore, there is no want of diversity in size or form of foliage.

Stock and Natural History Department.

Soiling Cattle.

In Europe and at the North, the system of soiling cattle—that is, confining them in stables and yards or lots and there feeding them with green forage—has been much discussed, and to some extent adopted. Now under the new order of things at the South, and with the improved system of farming which must inevitably take the place of the ruinous methods of the past, we must grow more stock, and, above all, *better* stock than we have been accustomed to; not only for the purpose of making our own meat, butter and cheese, but for the sake of the manure with which to enrich our land; and it becomes an important question how we can best and most profitably provide for the sustenance of this stock. In some portions of the South, as in Texas, Florida, East Tennessee and the mountainous regions of North Carolina, South Carolina and Georgia there is excellent natural pasturage; but this is not the case generally elsewhere, and we must consider how we can most advantageously remedy this natural deficiency. In this connection it will be well for us to look at the system of soiling, consider its advantages and disadvantages, and by experiment demonstrate its practicability or its impracticability.

A writer in the *Rural New Yorker* has lately advocated soiling for the South in a series of able, if not entirely convincing essays, part of the last of which we here transfer to our pages, and, without endorsing all its statements, commend it to the careful consideration of our readers:

SOILING FOR THE SOUTH.

Any system which offers the South a reasonable hope of competing with the North in animal productions, so far even as to supply its own wants, must be of the highest interest. Much of its climate is found to be uncongenial to the production of the best permanent grasses. Besides the natural obstacle to the production of the best perennial grasses for stock, the South is, at present, almost destitute of fences; and this offers another inducement for adopting the soiling system, which will not only overcome the serious difficulty of climate, but will render fences unnecessary, except for a yard in which to feed and exercise animals. In discussing this question in the *Rural* for May, 1868, we proved that the expense of fencing, where timber is reasonably cheap, is quite equal to the whole extra labor of soiling the animals; thus showing that, in point of expense, soiling is as cheap as pasturing. And if this system is practicable and beneficial for the South, one great loss of the war—the destruction of fences—will not be felt; besides, this system will enable the South to keep three times as many animals as she has ever done by pasturing. It affords us pleasure to assure our Southern brethren that when they fully understand the application of this system, they will cease to envy the North its rich milk, yellow, nutty flavored butter, and delicious cheese.

SOILING CROPS FOR THE SOUTH.

The South has many and great advantages over a colder climate in the practice of soiling. Her climate is such that a little care would afford green succulent food for stock nearly the whole year through. Clover, in most of her territory, will produce an abundant crop, and will be ready for the first cutting in March and April; second, in May and June; third, in August and September. The amount of land, in fine condition, required to keep a cow through the season, in clover, will be found astonishingly small. Clover produces the richest milk and the finest flavored butter, and its roots ramifying so extensively, furnish a large amount of vegetable matter to decay in and enrich the soil. But winter rye will furnish a still earlier soiling crop. It will, generally, be ready for a first cutting nearly a month earlier than clover, and may, likewise, be cut several times in a season. If cut through the first season before heading, Liebig says it will grow the second season; and if so, may be used again for soiling or perfecting a crop of rye. This green rye is not so nutritious in muscle forming matter as clover, but makes an excellent change of food. Indian corn may in this climate be sown very early for soiling, and will come in as a feeding crop between the cuttings of clover, and also affords the desired change of food. Corn should be sown at intervals so as to be in condition to cut at different periods. If cut before the formation of tassel, it will grow again and afford another crop. It produces milk of nearly as fine a flavor as clover. The amount of corn fodder that may be raised upon an acre is something almost fabulous, reaching, in the green state, to sixty tons. Corn, when grown thick and stalks small, may be cured, and furnishes an excellent winter food. For curing as fodder, it should be put in large compact shocks, and bound tightly around the top.

CHINESE SUGAR-CANE, (SORGHUM,)

must not be overlooked as a soiling crop. In the Southern climate and soil it grows most vigorously, and produces, if possible, a still more abundant crop than corn. This, like clover, may be cut many times in a season, and furnishes a most excellent quality of green food. Forty rods of rich ground would grow enough of this to supply a cow through the season. We have used it, and know that it produces milk of very rich, sweet flavor. Those who soil a large stock, may greatly lessen the labor by using a reaper with the latest self-raking attachment, in cutting corn, sorghum or rye, laying it off in compact gavels, easily loaded upon a one-horse cart and taken to the feeding barn or yard. To produce the best flavored milk, the green food should be fed first to cows.*

The advantages of soiling for the South may be summed up thus:

First.—It would save an immense outlay in fences.

Second.—It would enable the planter to keep double his present number of animals through the year, on the same land now used to pasture them, and also keep them in much better condition.

Third.—It would supply them with an abundance of dairy products, save a large outflow of cash, besides substituting a much healthier diet for the people.

Fourth.—The saving of manure would go far towards doubling their cotton and sugar crops. Within five years after its general adoption it would increase her exports one hundred millions. E. W. STEWART.

* The writer fails to mention Egyptian Millet, perhaps the best of all forage crops for the South, but one which, though long known to a few, is not so generally disseminated as it should be.

Brahma Fowls for Profit.

A writer in a Northern exchange, (we are sorry we cannot now recall the name, to give due credit,) has the following good words for the Brahmas:

"Our experience has been that for winter layers, for raising strong, hardy chickens, for careful mothers, for the possession of quiet, domestic habits, the Brahmas excel, and for table use they are, on the whole, as good as any other variety.

"They are unquestionably the best variety for breeding for an early market, the fall-laying pullets wanting to incubate by March, and, where warm quarters are provided, February even finds them clucking. If eggs are given them they are ready to lay again in ten weeks, and have brought up for a May market, when chickens are worth a dollar a pound, a brood fit for the poulterer. When they have laid about thirty-five eggs apiece they are again ready to incubate, and we have known of many instances of one Brahma hen hatching and rearing three broods in a year, and laying almost steadily between them.

"The objection brought forward against this breed, that the hens are always in the 'sitting fever,' is of no force; for, although they are not what are called 'everlasting layers,' they undoubtedly lay a much greater weight of eggs in a twelvemonth than any other breed."

Advice About Hogs.

A writer in Chester County, Pa., the original home of the Chester White Hog, sends the following sensible hints to the *Planter and Farmer:*

"No animal deteriorates faster than swine. *The trough is a great element in the character of a hog:* he is amazingly like a dandy. To keep him in first-rate trim, he soon eats his head off; yet, if he has to hunt his food, even with the slightest effort, he soon becomes too enterprising to be a fine specimen. As soon as a pig becomes enterprising, he ceases to be 'a Chester County White.' Dame Nature soon fits him to this *new order of things;* his nose lengthens, the disposition to use it also increases, his legs grow longer, his sides flatten, his hams lose their plumpness, and in one or two generations he is a match in a race for any ordinary dog. At least this is our experience.

"If you want to keep up the breed of good hogs, keep no more than you can keep so lazy they will not grunt."

Colic.—If a horse has the colic, give him two tablespoonsful of soda dissolved in warm water. Repeat the dose every half hour thereafter until the patient is well. For infants with colic, soda in small quantities is invaluable. If persons who are subject to colic will take soda, they will have no use for anti-spasmodics as a general thing. I give soda for colic, for the same reason you would use water to put fire out.—*Stock Journal.*

Diseases of Dogs.

Mr. Editor: I will give you the best cure for Mange in Dogs, that I have ever used and which I have never found to fail, viz:

LOTION FOR RED MANGE, (IN DOGS.)

R. White hellebore root.....2ʒ
Water .....3 pints.
Boil down to 2 pints, then add, while hot,
Sal ammoniac.....2ʒ
Corrosive sublimate.....1ʒ
Cape aloes.....½ʒ

Wet the dog all over with this, and one application will generally cure. It is clean and the dog need not be kept out of the house when it has been applied.

And for Staggers in dogs, to which I have found terriers very liable towards spring:

R. Give one teaspoonful of laudanum, which may or may not be diluted with a little water. One dose seldom fails to cure the worst case, but if it should not, repeat the dose in about two hours. R. C.

Hog Cholera.—W. Fulton, M. D., writes the Chicago *Republican* that the following is a specific remedy for hog cholera, discovered by Mr. T. McFee, of McLean County, Ill., and that there has not been a single instance known of its failing to cure: Take the *Polygonum punctatum*, or common smartweed—of which there are two varieties, the large and small—use both combined, or the small variety alone; make a strong decoction by boiling; add to this slop, and get the hogs to drink all you can. The effect is almost magical; your hog improves, sheds off, and fattens beyond expectation. It is a fine thing to give hogs that have no cholera, to make them improve faster.

To Keep Cattle free from Lice.—Water in which potatoes have been boiled possesses a poison fatal to lice. Dip into it a large sponge or woollen cloth, and wash the cattle freely, choosing a sunny, warm day for the operation, and as their hides dry, comb them with a currycomb, and see for yourself the effects of the water.—*Hearth and Home.*

Catnip for Bees.—A correspondent of the *Bee Journal* plants catnip along the fences and out-of-the-way places, where weeds ordinarily grow, for forage for bees. He says bees work on it in all kinds of weather. A slight frost does not kill it as it does other flowering plants, and it is in bloom from the time it first makes its appearance until killed by the frosts in the fall.

Department of Mining and the Mechanic Arts.

Ferdinand de Lesseps and the Suez Canal.

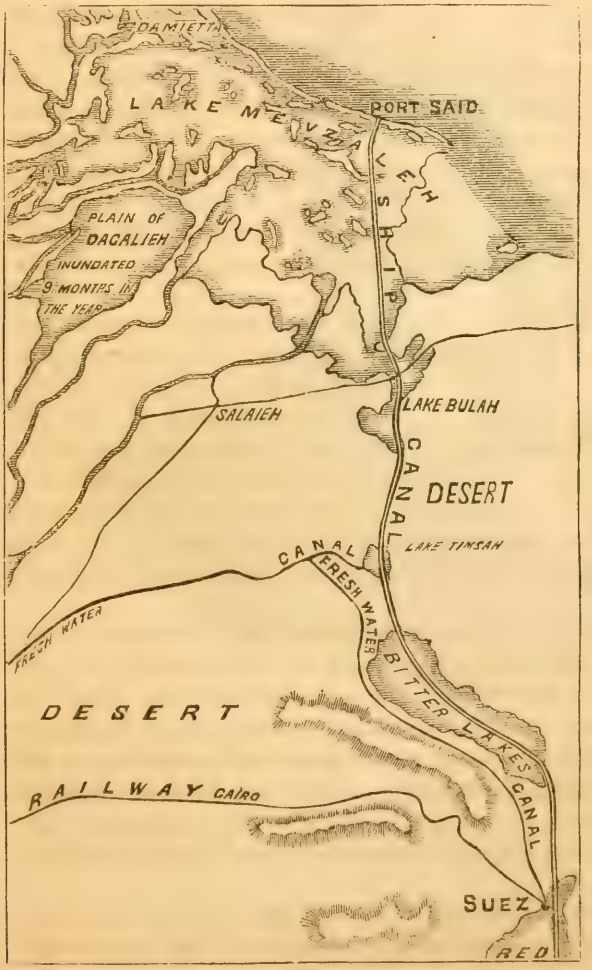
The year 1869 witnessed the completion of two of the grandest works of modern times—the Suez Canal and the Pacific Railway—the linking together of two oceans with a chain of iron and the flowing together of two seas through a pathway opened for their waters by human hands. The mind does not readily conceive an adequate idea of either of these events; and their ultimate results no man can foresee.

Singularly enough, one of these gigantic works has been executed in the old land of Egypt—the land of the Pharaohs, of Cheops, of the Pyramids and of the Nile; the other in this new world—the land of to-day—a country

which, when compared with Egypt, seems to have no history and no past. But it is with Egypt, and not with America; with the Suez Canal, and not with the Pacific Railway, that we have to do at present.

It was in 1854 that M. DeLesseps obtained the necessary concessions for making the canal, from the Viceroy of Egypt, but on account of various hindrances, it was not till 1858 that the subscriptions were opened, and "La Compagnie Universelle du Canal Maratime de Suez," commenced operations with a paid up capital of £8,000,000. The great work is now an accomplished fact.

It is not our design to describe the series of gigantic operations by which the grand result has been brought about, but rather to show by means of the accompanying map, and a brief description, what the work really is as it stands.



The whole length of the canal is about ninety miles. From Suez to the Bitter Lakes is about twelve miles; the passage through the Bitter Lakes is about twenty-four miles; eight miles from these to Lake Timsah; through Lake Timsah, three miles; on to Lake Bulah, eleven miles; eleven more to Lake Menzaleh; and through Lake Menzaleh, twenty miles. The established width is 328 feet; but, where difficult cuttings occur, the width is less. The sides slope to a width at bottom of 246 feet.—The highest ground cut through is at El Guisr, where the excavation is 85 feet. At Serapeum there is a cutting of 62 feet. Nearer Suez there is a cutting of 56 feet. Through the lakes the channel was, of course, dredged. The depth of the canal is 26 feet.

Two jetties or moles stretch into the sea, one nearly 3,000 yards long, the other 2,000 yards, to form the harbor of Port Said. At 3,000 yards from the coast-line a water depth of 30 feet is found. The harbor works have, of course, been very heavy and expensive. At Suez the company are forming a mole of 900 yards long, under shelter of which the ship channel to deep water has been formed by dredging.

The Suez Canal is the most magnificent and costly work of modern times, and one of which the age may well be proud; and yet it owes its existence, if we may credit the word of her viceroy, to old Egypt—the same that built the Pyramids more than three thousand years ago. The Egyptian prince says that the design of the canal was not adopted on the motion of the foreigner, but that it was conceived by the native government, and carried out for the purpose of regaining for the country an honorable place in the councils of the world. Be this as it may, the fame which belongs to the actual execution of the grand project, belongs to Ferdinand de Lesseps.

Somewhere about £12,000,000 has been expended upon the work. The quantities of earth excavated and dredged out have seemed fabulous when put in figures. The machines used have been, to a great extent, invented for this work, and are of great power and ingenuity. The dredging and pumping has gone on night and day.

We see how gigantic it is, but we at first but half appreciate the achievement. We gain a better conception of it when we consider what has been attained.

The practical object of the canal is to reduce the navigable distance between the West and the East by nearly 8,000 miles. From England to India, for example, the distance by the Cape of Good Hope is 15,000 miles; by the Suez Canal it will be 7,500. From this closer approximation of East and West will result, it is expected, an industrial and commercial revolution of which the effects are incalculable. The two hundred millions of Europeans who send their manufactured products to the East, and the seven hundred millions of Orientals who consume these products, and send in exchange their raw materials to the West, will be brought into closer, less costly, and more intimate relations.

Such is the Suez Canal, and such some of its natural and inevitable results. But what wonders may it not work for Egypt and the East generally! And it may affect even us here on the cotton fields of South Carolina. Egypt is our most formidable competitor in the production of cotton. She is in advance of us in the use of improved implements and machinery, working at the present time at least *two hundred steam plows* in her cotton fields and making, or at least has made, a profit of nearly $400 per acre from her lands. We have no fears of her at present, but who knows what the ultimate results of events now in progress may be?

Ferdinand de Lesseps, the master spirit of the great work we have been contemplating, was born at Versailles, France, in 1805, and has been widely and favorably known as a diplomatist. In 1831 he went to Egypt, and was

for a time Consul-General at Alexandria. In 1854 he was invited to Egypt by Mahommed Said to examine the project for the canal across the Isthmus of Suez. The results of this conference we have seen.

M. DeLesseps, now in his sixty-fifth year, is still hale, active, and full of energy and courage. Our portrait conveys a good idea of his strong and massive style of physiognomy. It is such a head and face as one would look for on the shoulders of a conqueror, and such he is.

How to Measure Water Powers.

[The following letter, from a practical engineer, will, we feel sure, interest many of our readers, and we hope our correspondent will continue to write on this very important subject.—Ed.]

Editor Rural Carolinian: Many persons in the South are owners of streams capable of being turned into water powers, and yet have very obscure views as to their capacity and value as such. I will endeavor to give to them the results of much study and some experience on this subject; and as it may be best to treat of water as a motor in several short papers, I propose to show first how any man of ordinary intelligence may be able, at but small expense and trouble, to ascertain very nearly the power a stream will furnish. The motive power which a stream of water may be made to furnish depends entirely on the height from which the water may be made to fall and the volume and regularity of the supply; or, in other words, the vertical space from *level of head* water to *level of tail* water, and the quantity the stream will supply. The first thing to be done in ascertaining the power which a stream will give is to find out the head which can be obtained. This may be arrived at in many ways; but we would advise that a surveyor be employed to run the level; and as this can usually be done with sufficient accuracy in a day or two at most, it ought not to cost much, and is too important to be neglected.

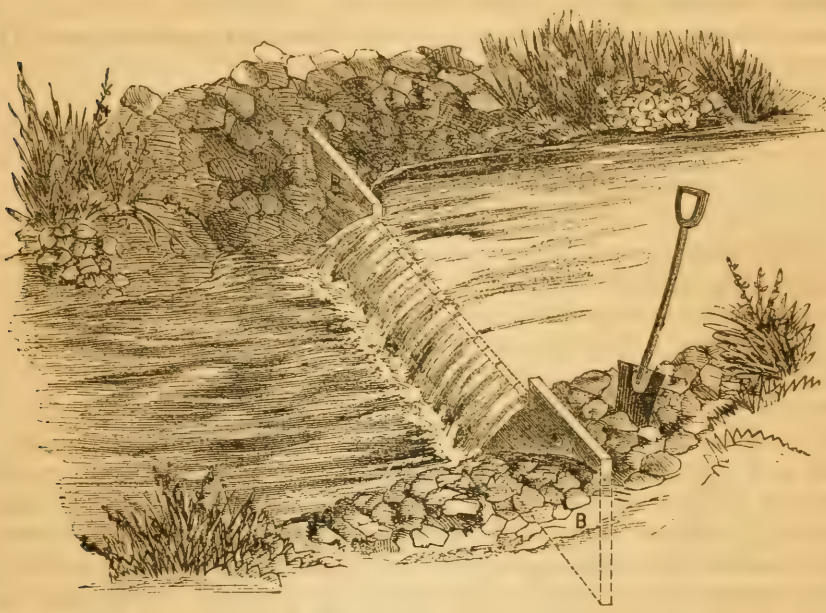
The head which can be had being ascertained, the next important step is to find out the volume of water the stream discharges; and just here allow me to say that most streams vary so much that it will require sound judgment to fix the average quantity of water discharged, still for general purposes an ordinarily dry spell will answer.

In small streams we would advise the following as a simple and very nearly correct method of measuring the flow of water: Take a thick, wide plank, cut a notch into one side of it large enough to allow the free passage of all the water, (this can be easily determined by observing the space in the bed of the stream required for the flow of the water,) dam up the stream with the plank across it, and make *all* the water flow through the notch; when it has been flowing regularly for a short time, measure with care the depth of the stream as it passes through the notch, and by reference to the first table

in these articles you will find the number of cubic feet of water per minute the stream is discharging.

To make the above plain, we present below an engraving which we mark

Plate No. 1.



If the stream is too large to allow the above-described method to be used, then we would advise the following, which will give you very nearly the actual volume, and may be applied to any stream: Select a point of the stream that is straight, or nearly so, for at least fifty yards, (less will answer if this distance cannot be had, but a longer distance is still better,) measure the *depth* and *width* at several points across the stream, then *average* all the measurements (*i. e.*, add together all the measurements of depths and divide the sum by the number of measurements, and the same with the width) so as to get as nearly a correct *cross section* of the stream as possible, or the average depth and width of the water. Then, to ascertain the velocity of the stream, take anything near the weight of water, a green stick of wood will do, or, what we have found best, get a large piece of wax, melt and roll it into a cone till it is at least twice as long as it is thick, drive a small nail into the large end to make it stand perpendicular in the water, then pin a small piece of white cloth (it must be very small so as not to be affected by the wind) in the top of the small end, so as to see it while floating, and place the wax in the middle of the stream, and see how long it takes to pass over the distance you have selected. (This should be done several times, on as calm a day as possible, and the average or the *longest* time used in your future calculations.) Thus the average width of the stream, multiplied by the average depth, and this result multiplied by the velocity of the stream per minute will give the

number of cubic feet the stream will furnish per minute, and from this deduct one-tenth, and the remainder will be the net quantity of water on which you may count. For the convenience of the reader we have calculated according to the formula of DuBuat:

Table No. 1.

Applicable to the Weir.—Height of Water in Inches and Tenths of an Inch.

Inches.	0	1-10	2-10	3-10	4-10	5-10	6-10	7-10	8-10	9-10
0	0.000	0.013	0.036	0.066	0.102	0.143	0.187	0.236	0.288	0.344
1	0.403	0.465	0.530	0.598	0.668	0.741	0.816	0.894	0.974	1.056
2	1.140	1.227	1.315	1.406	1.499	1.595	1.690	1.789	1.889	1.991
3	2.095	2.200	2.308	2.417	2.527	2.640	2.754	2.869	2.986	3.105
4	3.225	3.347	3.470	3.595	3.721	3.848	3.977	4.108	4.239	4.373
5	4.507	4.643	4.780	4.919	5.059	5.200	5.342	5.486	5.630	5.777
6	5.925	6.073	6.223	6.375	6.527	6.681	6.835	6.991	7.148	7.307
7	7.466	7.627	7.788	7.951	8.115	8.280	8.446	8.613	8.782	8.951
8	9.122	9.293	9.466	9.640	9.814	9.990	10.167	10.345	10.524	10.704
9	10.884	11.066	11.249	11.433	11.618	11.804	11.991	12.179	12.367	12.557
10	12.748	12.940	13.132	13.326	13.520	13.716	13.912	14.110	14.308	14.507
11	14.707	14.908	15.110	15.313	15.517	15.721	15.927	16.133	16.340	16.549
12	16.758	16.968	17.178	17.390	17.602	17.816	18.030	18 245	18.461	18.678
13	18.895	19.114	19.333	19 553	19.774	19.996	20.218	20.441	20.666	20.891
14	21.117	21.344	21.571	21.799	22.028	22.258	22.489	22.720	22.952	23.184
15	23.478	23.654	23.890	24.126	24.362	24.600	24.839	25.078	25.318	25.559
16	25.800	26.042	26.286	26.529	26.782	27.019	27.265	27.512	27.759	28.097
17	28.256	28.506	28.756	29.007	25.259	29.512	29.765	30.019	30.274	30.529
18	30.786									

EXPLANATION OF TABLE.

The above Table shows the number of cubic feet of water passing over a weir one inch in breadth, and from 1.10th of an inch to 18 inches deep. Left hand column shows the number of inches, and the other columns the fractions of an inch in tenths.

EXAMPLE.

Suppose you find that the stream of water will pass through a notch or weir cut out of a board say 5½ (or 5 5-10 inches) deep and 8 feet (96 inches) wide. To find the quantity of water, follow down the left hand column until you come to 5 inches, then run across until you come under the 5-10, you will there find 5.200, the number of cubic feet passing over a weir 5 5-10 inches deep and 1 inch wide. Then multiply 5.200 by 96 inches (the width of notch or weir) and the answer, 499.200, (four hundred and ninety-nine and the fraction,) will be the number of cubic feet of water the stream will furnish per minute.

Having ascertained the height of the head and the quantity of water in the stream, to tell how many horse power it will furnish, it is usual to calculate that for *every foot* of fall 8.88 cubic feet of water per *second* theoretically affords an available force of one-horse power, but from resistance from friction, etc., and the loss from wasted water, in accumulating and transmitting the power, a large deduction must be made from the above, dependent on the kind of wheels used. In some of the rudely constructed wheels it will require fully twice the above quantity flowing from a height of one foot to give one-horse power, but in the best class of *turbine* wheels the loss is only from 12½ to 25 per cent.

In our next article we propose to give our views as to the proper means of constructing a water power, and the kind of wheel to use.

UP COUNTRY.

'Tis Forty Years Since.

In 1831, and part of 1832, the writer, then studying in the schools of the world-renowned Paris, had his lodging in the modest upper chamber of the unpretending "Hotel de Calcutta," in the "Rue de Savoye," near the famous old "Pont Neuf," on the student's side of the Seine, in the "Pays Latin." At the same time there lived in the same hotel another young compatriot, also engaged in the prosecution of his studies. His calling led him into very different places from those frequented by the writer, but on Sundays and holidays a visit to the Louvre often found the latter standing, in wrapped admiration, before an immense canvas, reached by a stage eight or ten feet in height, upon which the former was daily engaged in copying the great picture of the "Shipwreck," which, at that day, graced, (and perhaps still graces,) the wall of the first room of the grand gallery of the Louvre. Time passed on, and, as the picture advanced to completion, and the artist grew in reputation, his friends augured most favorably for the future fame of an author whose first finished piece produced him (rumor said) the handsome sum of *one thousand dollars.*

In the summer of 1832, this artist was on his way home in one of the fine ships of the Havre and New York line. Steam did not, in those days, puff the traveller on his homeward path across the grand Atlantic in seven or eight days, and adverse winds not infrequently protracted the voyage far beyond the endurance of impatient absentees, longing for home, for fame, and for fortune. The voyage, on this occasion, was unusually long. The passengers had used every ordinary resource by which they might hope to subtract an hour or two from the tedious time. All had been employed, all had been exhausted, all had failed.

At last a fellow-passenger, whose studies had also been going on in that grand old omnibus, Paris, and who, like the painter, was returning home

with head and heart both filled, like his, with hopes of greatness, and the means of achieving it, and whose career has been hardly less successful, brought on deck his scientific apparatus, and proposed to lop off an hour or two from the tedious time by exhibiting experiments. Electricity and galvanism contributed their quota. In one of these experiments the effect produced was seen at a considerable distance from the instrument that was working. An Englishman, who was carelessly looking on, remarked, "What a pity we can't send messages as quick as that."

This remark seemed to pass away like the flash that had occasioned it, for no farther reference was made to it, but it was a seed that had fallen on good ground, and in due time it sprang up and bore fruit MILLIONFOLD.

Arrived at New York, the *ennuyé* passengers separated. But nothing was heard of the ambitious painter, whose copy of the "Shipwreck," had spread his fame ahead of him.

The old rope-walk that stood on or near the spot on which the distributing reservoir of the Croton water now is, was hired by some unknown person, who was engaged in some unknown experiments which did not seem to give much promise of useful result, since month after month, and year after year passed by and still the mysterious workman was as dark and mysterious as ever, and his barred doors still defied the curiosity of the curious, till at last even the mystery itself ceased to attract notice.

Ten years passed thus and at the end of that time MORSE emerged from his rope-walk with his TELEGRAPH accomplished, and electrified the world.

ASHES FOR FRUIT TREES.—The editor of *The Horticulturist* says: "We have known quite a number of instances—indeed, so often as to make it quite a rule—that old orchards apparently dying out have been brought back again to fruitfulness by the liberal use of wood-ashes, also stirring the soil. Potash is the most important element in the successful growth of all kinds of fruit trees. An old gentleman told a club, not long ago, that he had known a man make and preserve an orchard of apple trees in a flourishing and productive condition, originally placed on very poor ground, by sprinkling every year around each tree, to the circumference of the extent of its branches, half a bushel of ashes. We consider this a very important item."

CHEAP GARDEN FERTILIZERS.—One of the very best dressings for the garden in spring, may be obtained by frequently giving the floor of the hennery a coating of loam or leaf mould from the forest. All of the droppings from the roost will in this way be saved and composted, and this material for productive powers is excelled by no other fertilizers. The work should be attended to by every farmer, for it will repay a hundred-fold all the labor expended.

THE RURAL CAROLINIAN.

VOL. I.] CHARLESTON, S. C., FEBRUARY, 1870. [No. V.

D. H. JACQUES, EDITOR.

EDUCATION FOR THE FARMER.

A bad system of agriculture—the offspring of ignorance and indolence—impoverishes the soil and the planter alike. It is under such a system that our lands, as a rule, have grown less and less productive year by year, till thrown out and given up to broom sedge and old field pines. It is not "book farming" which has worn out our lands and made farming an unattractive and a comparatively unprofitable business, but farming without books—not education but ignorance. This ignorance still prevails too extensively, but at the same time we have examples of skilful, scientific farming. What is the result of such farming? It is not too much to say that the *best farming* of to-day is fourfold more productive than that of our fathers, though we can not claim to be more industrious or energetic than they. The use of improved implements, doing better work and saving labor at the same time; liberal manuring, adapted in kind to the crop to be produced, and a more rational cultivation, have combined to ensure the increased production. Now the best farming of to-day is educated farming—the result of study and thought—the offspring of applied science—in other words, "book farming." It is this kind of farming which enables Mr. David Dickson, of Georgia, to make two bales of cotton to the acre on his poor, worn out lands, and Dr. J. W. Parker, of this State, to harvest 200 bushels of corn from an acre of what was lately a sour, malaria-breeding quagmire.

We are not advocating mere speculation—untried theorising—but *carefully applied science*—the deductions philosophy confirmed by experiment. "Progress with prudence, practice with science" is our motto.

We are apt to undervalue the debt which manual labor owes to the intellectual labor of discovery and invention. As some one has aptly said: "Patient, laborious thought, applied to the problems of pneumatics and mechanics, has given us the steam engine, the locomotive, the spinning jenny, the power loom, the sewing machine, the reaper, the thresher, the grain drill and a host of other labor-multiplying machines, without which, to-day, we should be almost savages."

Let not the farmer, of all men, despise education—professional agricultural education, particularly—but get all the knowledge he can from books as well as from experience, and see to it that his sons shall have, so far as possible, the advantages which he himself may have lacked, in qualifying themselves for the most honorable of all callings—the cultivation of the soil.

CHARLESTON COUNTY SOCIETY.

We are happy to be able to record the complete organization, under decidedly favorable auspices, of the Charleston County Agricultural and Horticultural Society.

At a meeting held at the rooms of THE RURAL CAROLINIAN, on the second Thursday of January, a constitution and by-laws were reported and adopted, and the following officers elected:

President.—Hon. Charles Macbeth.

Vice-Presidents.—W. G. Vardell, Hon. S. W. Barker, W. M. Lawton, J. Jenkins Mikell.

Executive Committee.—W. G. Vardell, Chairman; W. A. Clarke, Elias Venning, A. B. Rose, J. C. Cain, T. D. Eason, G. H. Moffett, J. T. Dill, H. B. Horlbeck.

Treasurer.—James Price.

Corresponding Secretary.—Dr. H. B. Horlbeck.

Recording Secretary.—R. E. Brown.

In the evening, the first lecture before the new Society was delivered at the Medical College, by Prof. C. U. Shepard, Jr., on the

"Sources of Plant-Food." It was a highly instructive address, some extracts from which we hope to present to our readers in another number.

The Society has taken hold of the work before it in a way that indicates a determination to make itself felt for good throughout the country. The yearly subscription to the Society is only $2, and we trust that it will soon number several hundreds of members. Subscriptions will be received at this office, also donations of books for its library.

GOOD FARMING PAYS.

Last year a gentleman purchased twenty-two acres of land in Christ Church Parish, near Mt. Pleasant, S. C., for $30 per acre—$660. The results of the season's farming are figured up as follows:

12 acres in fine Sea Island Cotton produced an average of 73 lbs. clean cotton to the acre, 876 lbs., sold for $1 60 per lb.....	$1,401 60
3 acres Cucumbers, 1 acre Rice..... Sold for (net)....	217 00
	$1,618 60
Total cost of making the crop.....	550 00
Balance	$1,068 60
In addition, there is now on hand eighty bushels of cotton seed, (the Palmetto variety,) worth, we are told, $5 per bushel.....	400 00
	$1,468 60

There were also an acre of groundnuts and an acre of tomatoes not brought into the foregoing account, and three acres of peas planted on the ground from which the cucumbers were taken. Half of the crop, it will be seen, will more than pay for the land. The culture was of course thorough, and everything well managed, but the planter thinks the great secret lies in having *the right kind of cotton and land exactly adapted to it.* The Palmetto cotton often sells at even higher figures than those here noted, but can be produced to advantage only on a particular kind of land—at least, this is the opinion of our informant.

A PRECURSOR OF THE STEAM PLOW.

We lately had the pleasure of receiving a visit from Mr. Eddison, of the firm of John Fowler & Co., Leeds, England, who visits the South with an eye to business. We hope that several steam plows of this enterprising company's manufacture will soon follow. It is a singular circumstance, narrated by Mr. Eddison, that Mr. Fowler at first strenuously opposed the use of the steam plow as impracticable, but afterward being induced to give one a trial, was convinced of its utility, and set himself about the work of improving it. The result is the efficient machine now made by Fowler & Co.

During our civil war when Europe was threatened with a cotton famine, Messrs. Fowler & Co. received, at one time, an order from the Pacha of Egypt for £100,000 worth of steam plows, to be furnished at the earliest day possible. The Pacha now employs at least two hundred of these implements in the culture of cotton. How they work and with what results, we may tell at another time.

——Hon. Marshall P. Wilder, President of the American Pomological Society, has favored us with a copy of the Proceedings of the American Pomological Society of the Session of 1869, the value of which we trust we can fully appreciate. He will please accept our thanks for this as well as for the kind and flattering terms in which he speaks of our magazine. We are very glad to number among our subscribers one who deservedly stands so high among the living pomologists of the world.

——We are indebted to the Hon. Horace Capron for the Report of the Department of Agriculture for 1868, which came to hand too late for extended notice in this number.

——We had the pleasure the other day of seeing the process of drying off the sugar from the "mush" or granulated sorghum syrup by means of the centrifugal mill. The operation took place in this city under the superintendence of Dr. Passmore, and certainly produced a very fine looking sugar, specimens of which may be seen at the office of The Rural Carolinian.

——We shall be glad to receive from the friends of agricultural and horticultural progress in all parts of the world specimens of new, rare, or curious plants and seeds, for the purpose of testing them on our own grounds and reporting the result through The Rural Carolinian.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

The Work of Preparation for planting should be vigorously pushed, wherever the conditions of soil and climate permit.

Manure (we reiterate) must be prepared, bought and hauled, or got ready in as liberal quantities as means will permit.

Ditching and Draining, where not already completed, may still go on, and too much of this work can hardly be done on most of our plantations.

Oats should be largely planted this season, (and every season.) This crop is not so particular in regard to soil as many others; but it must not be too wet. The land intended for oats should have been plowed early in the winter, and crossplowed before sowing. The early breaking up, however, is not essential. Farmers differ somewhat in regard to the best time to sow oats, and the time must of course vary with the soil and season as well as the latitude. In this region (Charleston and southward) oats may, and we think should be sown during the present month, if the land be not too wet.

Corn will be planted during this month in Florida, and elsewhere in the extreme southern limits of our extensive parish, but too early planting, further North, should be avoided. Let the work of preparing for this crop be pushed forward, however, at all points.

GARDEN WORK.

Peas, for a succession, may still be planted in our low country, but are less likely to succeed than those planted in January. Hoe those that are advanced. A little further North, this is a good time to plant the main crop.

Irish Potatoes, if not already planted, should now be put in. See directions in previous numbers.

Beets, *Carrots* and *Parsnips* may be put in for a full crop (in this latitude) from the middle to the last of this month; also *Salsify*, *Swiss Chard*, *Cress*, *Mustard*, *Kohl Rabi*, *etc.*

Lettuce, *Radishes* and *Turnips* for a succession may be put in any time during the month.

Sugar Corn may be tried toward the last of of the month, but the main crop should be deferred till March.

Tomatoes and other tender plants may be started in a hot-bed or cold frame.

Strawberry beds should have a careful dressing and working.

Cabbage Plants should be set out at various times during the month, and as they begin to grow, the soil should be frequently stirred.

THE FLOWER GARDEN.

Cuttings of Roses and evergreen plants may now be set out; also cutting of geraniums and most other greenhouse plants.

Pinks and *Sweet Williams* may have their roots divided and transplanted.

Asters, *Stocks*, and other favorite annual plants may be sown as the weather gets warm.

The Flower Garden Soil should not be too rich, but must be thoroughly pulverized.

THE ORCHARD AND VINEYARD.

Pruning and *Planting*, if not already done, must be finished up at once. See that your grape trellises and arbors are in repair. Mulch newly planted trees and vines.

RURAL NOTES AND QUERIES.

HARD TO BEAT.—We have received from B. F. Crayton, Esq., of Anderson Courthouse, S. C., a turnip weighing 8 pounds and 12 ounces, and measuring 29½ inches in circumference. Anderson is ahead, so far. Bring on your big turnips!

THE MURFEE SUBSOILER.—We have one of these popular implements on exhibition at the office of THE RURAL CAROLINIAN, and hope to try its working capacity in the field at an early day. In the meantime come and see it. The Messrs. Murfee will please accept our best thanks.

MR. FULLER AND THE MOLES.—In your December number the question is asked, do moles eat corn, potatoes, etc.? While I am unable to answer that question, I think I can tell you how you can rid yourself of them. For the past nine years I have experienced considerable difficulty in getting a stand in my garden in consequence of the undermining or gnawing of the moles, or their twin brother, the field mouse. Mentioning the fact to a friend, he informed me that a few castor beans dropped in their holes would destroy them, and that he had been in the habit of scattering the beans about in his

fields for a number of years, and that as long as he did so, the moles, etc., never made their appearance on his place. Acting on this information, I placed about a handful in the holes around my garden, and in two weeks there was not a fresh track to be seen, nor have I been annoyed by moles since. I have since learned that it is a common practice in this section of country to allow the castor bean to grow in fields and gardens which are infested by moles, and that the best results attend the practice.

I think if Mr. Fuller will try castor beans, he will award me the $100, for naming the best means of destroying the mole.

I. N. Cog.

Drying Blackberries.—Will you please inform me through the columns of The Carolinian, the proper manner for curing (drying) blackberries for market? J. C. M.

The only mode we have practiced is to spread them upon a platform constructed for the purpose on the south side of a building or fence, and there exposing them to the sun till dry. It is necessary, however, to subject them afterward to a strong heat in an oven to kill the eggs of insects which are, in this climate, pretty sure to be deposited in them. Kiln drying would, perhaps, be better where the curing is to be done on a large scale. Can some one give our inquirer further information?

General Grant Tomato.—Edward J. Evans & Co., York, Pa., have sent us seed of this new variety. We will give General Grant the whole of our long summer to "fight it out on this line," and report the result.

Lespedeza Striata.—Where can I get the Japanese clover or *Lespedeza* seed, and at what price per gallon? H. A. G.

We are sorry not to be able to answer these questions. Those who have the seed should advertise.

Upland Rice Culture.—As there is in our neighborhood thousands of acres uncultivated pine lands, swamp as well as upland, and as all our old pioneer farmers, who are scattered around in the woods, though far apart, have tried the cultivation of rice, and succeeded, so far, well in small patches, it would be very interesting for a great many new beginners to have in your valuable paper a treatise on rice culture on hills or level land, but not subject to have it overflowed,—high land rice culture. Will you be so kind and treat your readers of this section with something of the kind? Rice.

Will not some experienced cultivator give us a brief practical article on upland rice culture?

To Measure Corn in the Crib.—Multiply the number of cubic feet by .8, and strike off the right hand figure. This will give you the number of bushels *shelled* corn the crib would hold. If the corn is in the shuck, divide the product by 3; if clean shucked divide by 2. For example, crib is 20 feet long, 15 feet wide, 10 feet deep:

```
  20
  15
 ---
 300
  10
 ----
3000
  .8
 ------
3)2400.0 shelled corn.
 ------
 800     in shuck.
 ---
1,200    clean shucked.
```

G. P. H.

Chickens—Sheep.—1. Can chickens be extensively and profitably raised here?

2. What is the most improved plan for henery, etc.?

3. The best breeds for this climate?

4. Describe the diseases most liable, and cure?

5. Why cannot sheep be raised here?

Aiken, S. C. J. T.

The questions in regard to chickens are important and pertinent, but it would require a long article to answer them all satisfactorily. We will try, with the help of our experienced contributors, to give them a thorough discussion in future numbers. We are inclined to think that chickens can be raised with profit, and that the Brahmas, or a cross between the Brahmas and our common dunghill fowls, will prove well adapted to our climate.

The great obstacle, at present, to successful sheep raising in the South is the presence of so many "irresponsible" dogs. Shall we kill the dogs and have mutton? or shall we spare the miserable curs and forego sheep raising?

Broom-Corn Seed.—Inquiries are made

for Broom-Corn Seed and its price. Persons having it for sale should advertise it in our magazine. It costs, we believe, about $3 per bushel.

Preserving Eggs.—Vegetable oils, more especially linseed, simply rubbed on to the egg, hinders any alteration for a sufficiently extensive period, and presents a very simple and efficacious method of preservation, eclipsing any methods hitherto recommended or practiced.

Bee Culture.—Bee culture has received little attention with us at the South, though the conditions would seem to favor its success. Now that we are engaged in diversifying our industry, would it not be well to look into the matter of bee keeping as a source of profit? D. L. Adair, of Hawesville, Ky., publishes an annual, entitled *Annals of Bee Culture*, which contains much useful information on the subject. The number for 1869 is before us, and we may make extracts in a future issue. The number for 1870 will be published in March.

Peanuts or Pinders.—If some one of your contributors would favor us with a description of the method of cultivating the peanut, I would feel under great obligations, and perhaps the subject might not prove uninteresting to other readers. I would like to learn the whole process, from selecting seed to preparing the nuts for market, including the quantity and quality of manure best adapted to the cultivation. E.

Breaking Oxen.—The use of oxen on the farm is becoming more general than formerly in some portions of the country, and we think their value as draft animals has not been fully appreciated. A young farmer wishes information in regard to the best mode of breaking them. Will some one who has experience please give us an article on the subject?

The Jacques Stump Puller.—Please inform me what will be the probable cost of the "Jacques Stump Puller?" Will it lift out our long top-rooted pine stumps?

Reader.

It takes time to perfect arrangements for the manufacture of a new implement, and for the necessary experiments to test its practical working capacities; but we hope before another number of our magazine shall be issued, to be able to answer all the numerous inquiries that have been made concerning it.

SCIENTIFIC NOTES.

On Ambrosine, a New Organic Mineral Substance.—An irregular oval-shaped mass of a mineral, closely resembling amber, has been brought to my notice by Major Edward Willis, of this city; and is here noticed in the hope that an additional supply of the same curious substance may be obtained by our phosphatic explorers. The present mass was originally of the size of a man's fist. It is of a yellowish-brown color externally, but within, is clove-brown. It breaks with about the same facility as amber; has a conchoidal fracture, and a resinous lustre. It is feebly translucent. Its specific gravity is but slightly above that of water. Indeed, small fragments of it when thrown into water float for a short time, until they part with adhering air; when they slowly descend through the liquid. It is strongly electric by friction. It melts into a clear yellowish liquid at about 460° F.; though it softens at a much lower temperature.

It gives off considerable succinic acid, long before it melts. On fusion, a dense yellow oil is volatilized, attended with an agreeable balsamic odor, wholly unlike that from the resins of our pines. A dark brown, non-volatile fluid remains behind, so long as the melting heat is kept up.

As it differs from any of the oxygenated hydrocarbons known, I have called it *Ambrosine*—a term compounded from the two words amber and rosin; to both of which substances it bears a resemblance. It is very combustible,—burning with a bright, yellowish-white light, a pleasant odor; and without leaving any carbon, or even the slightest ash, behind. It is largely soluble in oil of turpentine, alcohol, ether and chloroform, as well as in a solution of potash; and is feebly taken up by the strong acids, without suffering decomposition.

It probably originated in some of the coniferous trees that existed during the pleiocene epoch in geology, when our phosphatic formation was in progress of deposition.

Charles Upham Shepard, Sr.

Charleston, January 20.

—— A writer in the *Rural New Yorker* suggests that the St. John's River, Florida, may be a branch of the Gulf stream. He

says: "The current and general direction of the river is north, (like the Gulf stream,) unlike any other river at the South, and from its volume of water and general direction of current—together with the fact that in numerous of the interior lakes the water rises and falls with the ocean tides—I have formed the idea that the St. John's River is a branch of the Gulf stream, finding its outlet by some subterranean passage."

—— A French physician states that the fashion of wearing high-heeled shoes "has produced distinct diseases not only of the distorted foot, but of the body. As the frame is thrown permanently into an unnatural position, it affects the spine, and as it is a question of balancing, nervous irritation sometimes occurs. You see by the expression of the face how much a woman suffers who has walked about or even stood in high-heeled boots."

—— Dr. Liebseich, of Berlin, has discovered a new anæsthetic agent—"chloral"—the aldehyde of trichloreted acetic acid, obtained by the action of chlorine gas upon alcohol. It is thought that it will prove in many cases superior to chloroform or ether.

—— A discovery is said to have been made in the Department de la Dordogne, France, of human skeletons coëval with the mammoths and undeniably pertaining to the earliest quarternary period. M. Lartet, the distinguished palæontologist, who is employed by the government to investigate the matter, reports that the bones of five skeletons have been discovered, and that they belong to some gigantic race whose limbs, both in size and form, must have resembled those of the gorilla.

—— An eminent French physician says the decrease of dyspepsia and bilious affections in Paris is owing to the increased consumption of apples, which fruit, he maintains, is an admirable prophylactic and tonic, as well as a very nourishing and easily digested article of food. The Parisians devour one hundred millions of apples every winter.

——Dr. A. W. Hall read a lecture before the Polytechnic Branch of the American Institute, at the Cooper Institute, lately, on the cause of auroral lights, in which he took issue with Prof. Loomis and other scientists, who attribute these phenomena to electrical action. Dr. Hall's theory is that the boreal display is produced by the rays of the sun, which are reflected from clouds surrounding the pole, to the ice and snow of the Arctic regions, and thence again reflected to the clouds, and so back and forth, until it comes within our range of vision.

SPIRIT OF THE RURAL PRESS.

——*Coleman's Rural World* urges upon farmers the keeping of sheep for their flesh rather than for wool. He thinks the substitute of mutton for pork on our tables would give a clear advantage every way.

——The *Country Gentleman*, in an article on the "Education of Farmers," truly says:

"When old age overtakes the uneducated farmer, he has few resources—few amusements; his pipe may while away a few hours—sleep may take to itself a few more of the hours of the day, but time hangs heavily. Not so had his mental powers been cultivated with his physical; then in books he would find a panacea for nearly every ill."

——The *Model Farmer*, at Corinth, Miss., urges planters to hire the freedmen at so much per month, urging that such a contract will give better satisfaction and produce more cotton than to allow the negro half the crop he may grow.

——The *Southern Farmer*, Memphis, Tenn., says:

"No man is fit to manage a farm who does not think beforehand what it is best to do, and which is the best way to do it. Work without thought, without plan, has been the blunder of many who pretend to be farmers."

Hearth and Home adds:

"Truer words than these have rarely found utterance. Raising crops without knowledge as to their cost, or thought as to whether they will sell or not, has sapped many a fortune.

"Fifteen years ago, a man of our acquaintance, (city bred,) worth forty thousand dollars, bought a farm in the country. He plowed and planted without thought, hired help that did not half earn their wages, lived on the farm three years, and then died, and his inventory was less by more than one-third of what he had in cash three years before."

——A writer in the *Farmer and Citizen*, answering the question "How do the freedmen work," says:

"We answer very briefly and without any

hesitation, when left solely to themselves they do precisely as all the race have done who have gone before them. They sink down into idleness, filth, disease and death. On the other hand, we state with pleasure that wherever the negro has been controlled, put to work, compelled to work by contract, and has had the superintendence of a competent white man, he does well."

——The *Farmer's Journal* (Lexington, Ky.) says that the cost of cultivating broom-corn is just equal to that of Indian corn until it is ready to cut. The cutting, hauling and threshing requires eight men per day for each acre of corn, besides two teams and one wagon. This includes putting it on the racks for curing. The cost of baling is just double that of baling hay.

——The *Reconstructed Farmer* is in favor of "book farming," and says:

"We are glad to find this prejudicial cry of 'book farming' against good agricultural publications dying out at the South, and it is a healthy indication that our planters are reading and studying the science of agriculture, as they have never done before."

——*Tilton's Journal of Horticulture*, describes among the new vegetables of promise *Dewing's Early Turnip Beet*, a deep blood-red variety, very fine grained, tender and sugary; and the *Evergreen-podded Bean*, from the Pacific coast, desirable as a snap bean and for pickles.

——Prof. W. Leroy Broun, in the *Southern Farm and Home*, in an article on the "Relative Value of Manures," thus speaks of liquid manures:

"The liquid manure of the horse is worth nearly *five times as much* as the solid manure, pound for pound. And yet the liquid portions we generally allow to be wasted. The liquid manure of the horse is worth six times as much as the liquid manure of the cow, and the mixed manure of the horse is worth *twice as much* as the mixed manure of the cow."

INDUSTRIAL ITEMS.

—— The United States and West India Fresh Meat and Fruit Company, having headquarters in Philadelphia, hold the patent right of Bray's invention for preserving meat and fruit on the refrigerating plan. This patent has been already applied on the steamer Agnes, plying between New Orleans and Indianola. The capital stock is $1,000,000, with a working capital of $600,000.

Sherman & West, of New York, (heavy dealers in produce and fruits,) have entered into a contract with this company to fit up, early in the spring, the Charleston and Savannah steamships and connecting lines of steamers to St. John's River, Florida, by the application of this patent on board said steamers. The same firm will also purchase 10,000 acres of land near Savannah, and put the same in fruits and early vegetables.

—— The Atlanta *Constitution* says that during the month of November, 263 car loads of mules were brought into that city, amounting to 4,060 head of mules and horses. That during the fall months prior to November, 286 car loads, or 5,720 head or more, were brought to that city—making the total number received to December 1st, 9,780 head. The same paper says they are still arriving freely.

—— The Texas cattle trade is beginning to show large proportions. There were lately between twenty and thirty thousand head at Elsworth, Kansas. That point furnishes feeding grounds of the finest kind, and an extended season.

—— A New Hampshire farmer reports that an Alderney cow, belonging to a neighbor, gives 20 quarts of milk per day. Another, formerly belonging to the writer, "gave, upon the average, 20 quarts per day through the season."

—— The number of threshing machines in the United States is estimated at about two hundred and twenty-nine thousand, and they save five per cent. more of the grain than the flail. The saving by them annually is about ten million bushels.

—— Many English farmers feed no hay to their work horses, but keep them in high working order with straw, roots and shorts. The equivalent of twelve tons of hay can be produced on one acre in roots. Farmers in this country will eventually bring vegetables more into use as stock feed, for roots are cheap, healthy and nutritious.

——E. J. Marster's, Shaw's Flat, Cal., has taken out a patent for a new hay or cotton press, which is arranged so that it can be readily transported from one place to another, to press the material directly on the field or wherever it may be desired.

—— Baron Liebig states that the land of Hesse, Germany, has risen 300 per cent. in value during fifteen years, simply under scientific agriculture.

—— A machine for harvesting rice, called "The Rice Bird," is manufactured by H. S. Myers & Co., York, Pa. We understand that several of these machines were in use in this State last season.

——The following is a German recipe for coating wood with a substance as hard as stone: 40 parts of chalk, 50 of resin, and 4 of linseed oil, melted together; to this should be added one part of oxide of copper, and afterwards one part of sulphuric acid. This last ingredient must be added carefully. The mixture, while hot, is applied with a brush.

——Eggs are preserved on a large scale in Paris by placing in wire baskets, about a dozen at a time, and immersing them for about a minute in boiling water. A thin layer of the egg coagulates on the inner surface of the shell, forming a film impermeable to air.

——Asa Waters, Mobile, Ala., has patented a new and useful improvement in "Tube," or "Drive Wells," which consists in covering the perforated well tube with wire cloth, and in protecting the wire cloth covering with a perforated metallic shield.

——John Ahern, Baltimore, Md., has patented a composition for destroying insects on flowers, plants, vines and bushes. It is made in liquid form and applied by sprinkling, either with a wisp of hay or a watering pot.

MERE MENTION.

—— The "Golden Prolific" cotton seed is becoming very popular in the Southwest. It is said to yield much more heavily than the Dickson variety. The seed sells for $5 per bushel.

—— In Florida they have a kind of cotton called the "Florida Improved," for which great things are claimed. It was originated by Mr. A. M. Moseley, of Gadsden County, in that State. We should be glad to receive specimens of fibre and seed for exhibition.

—— A correspondent of *Moore's Rural New Yorker* describes twenty different varieties of tomatoes that he has cultivated this year.

—— Recent explorations have practically demonstrated that the St. John's River, Florida, is navigable for steamers for 375 miles to Lake Washington.

—— The consumption of tea in the United States amounts to more than 30,000,000 lbs. per annum. The whole might be produced in the South.

—— In California they make 350 gallons of sorghum syrup to the acre, on average land.

—— It has been discovered, by careful experiments, that the weight of a bale of cotton varies slightly with the temperature. A fall of ten degrees in the thermometer causes a bale of cotton to gain about a pound and a half in weight.

—— J. H. Flickinger, of Santa Clara Valley, Cal., raised 200 tons of beets last year, which averaged twenty-five beets to the ton. There were many of them that exceeded 100 lbs. to the beet.

—— Several thorough tests of the castor bean as a protection for cotton against the ravages of the worm, have been made with favorable results. A planter in Jackson County, Texas, however, writes to the Department of Agriculture that in his locality it has proved a failure.

—— The cultivation of the cork tree, on a small scale, as an experiment, has proved a success in eastern North Carolina.

—— Specimens of the work done by the Diamond Mill Company's Cotton Seed Huller may be seen at the rooms of THE RURAL CAROLINIAN. The cleaning of the seed is perfect.

—— It is stated that a California company has ordered 50,000 ramie roots from New Orleans, and that they have contracted with an English house to take all the fibre they can produce.

—— The cultivation of broom-corn is attracting increased attention throughout the South.

—— The orange yield has been very large in Florida, nothwithstanding the frost of last winter.

—— The United States is the greatest consumer of coffee. We use in the United States

nearly one-third of all that is consumed in the world, using nearly seven times as much as Great Britain, with a population not very far from the same. Germany comes next. Russia, the largest and most populous, the least.

—— At present, cheese seventeen and rising, the dairy business will arrest the attention of every farmer in the country. Will it be overdone?

—— The original vine of the Scuppernong grape is said to be growing on Roanoke Island, and was first discovered by the colony landing with Sir Walter Raleigh in 1654 or 1655, and is probably the oldest vine known at the present day.

—— A lot of bamboo plants, of a variety which grows to a height of twenty-five to thirty feet, and are from three to four inches in diameter, have been imported and planted in California, which may, before the close of this century, rival those of Asia.

——The French Government, with a view to raise the general standard of farming, offers in each of the districts 200*l.*, and a silver cup worth another 120*l.*, called the "Premium of Honor," as a prize for the best-managed farm on which the most useful improvements have been introduced.

—— It is proposed to organize regiments of laborers, who, after gathering the grain crops of the West, are to move southward, picking the cotton and harvesting the cane.

—— The number of vineyards in California is prodigious; at least 3,000,000 gallons of wine are annually produced. The estate yclept "Buena Vista," (Bellevue,) Sonoma County, has 450 acres of vines.

—— D. L. Yulee, Esq., President of the Florida Railroad, offers to donate eligible sites for the erection of common school-houses wherever needed along the line of road.

—— This country wants less in pasture, more in woods, longer stables, bigger manure heaps, fewer inside fences. Our cows travel too far. Horse muscle is far cheaper than cow muscle. Stall feeding makes thorough weeding.

—— David Dickson, of Sparta, made eight hundred bales of cotton last year, in spite of the four months drouth. This is suggestive.

—— The product of a single Scuppernong grape vine in Jacksonville, Fla., was sold last fall for $192.

—— A chestnut tree, on the farm of Mr. Cooley, in Carrol County, Geo., recently cut down, made 1,500 rails, and measured nine feet across the stump.

—— The most beautiful nurseryman's catalogue we have lately seen is that of Isador Bush & Son, of the Bushberg vineyards and orchards, Jefferson County, Mo. It is magnificently illustrated, and serves as a manual of small fruit culture, as well as a catalogue of plants and vines.

—— A company has been organized in Baltimore for the manufacture of Ransome's patent concrete stone, which seems to have proved a complete success in England. A similar company should be formed here. Making stone from sand is just the thing for this sandy, stoneless country.

Correspondence.

SUGGESTIONS TO FRUIT-GROWERS.

[The following letter from Mr. F. R. Elliott, the well known pomologist and Secretary of the American Pomological Society, contains suggestions which we hope will be acted upon by Southern fruit-growers.—Ed.]

D. H. Jacques, Esq.:

Dear Sir: I am indebted for numbers of The Rural Carolinian, and you will permit me to say that in contents, matter as well as typographical execution, it has no superior, if it has an equal in the United States. May it and you prosper. As connected with the American Pomological Society, which is to hold its next meeting at Richmond, I am of course specially interested in a knowledge of your Southern fruits, and while I note you figure some varieties, I wish you could induce some of your Southern amateurs to write us of what they know in relation to the success of varieties.

The Rasche Apple, which you figured in January number, being of Missouri origin, and there a winter variety keeping until April, may with you prove a success and keep until January. The Cherry, Archduke, which you also figure, is one of the very best of its class. I would suggest to your fruit-growers the working it on Morello stocks, budding or grafting it near the ground, and then letting the tree grow more as a bush than a tree. Plant at distances of not over

eight feet apart—and I prefer six feet—then mulch the ground and let alone. Never prune or cut away a single twig. By such a course I think the South can grow almost any variety of cherry. The practice is certainly worth a trial if it has never been done—a point on which I am ignorant.

Yours, truly, F. R. Elliott.

Cleveland, Ohio, January 12.

FARM IMPLEMENTS.

Editor of The Rural Carolinian:

Dear Sir: In the advertising department of your most excellent magazine, I see one of "Dodge's Perfect Plows" offered. I like this plow, and wrote to know the price. I was surprised to find it as high as ten dollars. I suppose this price includes the sweep and scraper, but still it seems high. I also wrote to New York to inquire the price of "Smith's Cast Steel Plow." This was fifteen dollars for the one-horse and twenty-five dollars for a two-horse; and in Baltimore the same plow, *i. e.*, D one-horse, forty lbs., sixteen dollars; and B two-horse, seventy-five to eighty lbs., thirty dollars. This is also an excellent pattern and plow, and Collins & Co. advertise "Hayden's Subsoil Attachment," which can be used with the turn plow at the same time, the subsoil following between the heel of the bar and mold-board, just lifting and breaking the sub-strata, thus making it a complete implement in preparing land for either cotton or corn. But the price, while it saves the labor of one team is high—thirteen dollars extra for the attachment, the two-horse costing thirty-six dollars complete, and I suppose the one-horse twenty-six or twenty-eight dollars. The manufacturing cost of the Dodge Plow cannot, surely, exceed four dollars, and the other not more than eight dollars. It seems to me that those who offer the Dodge Plow, as well as others, would endeavor to put them at the lowest fair living rate, in view of the very many planters who need a really good plow. If the price was seven or eight dollars even for the one-horse, and ten or eleven dollars for the two, I think five or six could and would be sold where one is now, and, perhaps, even more than this. It would certainly be far better to sell five or six plows at eight dollars each than one or two at ten dollars each, and then so many more would thus be benefited.

I see in your last, a suggestion to farmers and others of forming a joint stock company for manufacturing agricultural implements. This is wise; it is even a more important step, in a progressive point of view, than establishing a cotton factory, and I hope you will lend the aid of your most excellent journal to keep it alive, by urging all who can to advance capital. This kind of progress would benefit infinitely more than a cotton factory, while the profits to the stockholders would scarcely be less, and at the same time produce a competition that would bring down the articles manufactured to the lowest price. But I will close before I become tedious. In closing, I would suggest to the advertisers of implements, especially any very useful one, to give the different prices at the same time. This can be done when the article is not a fluctuating one, and would often save the time taken to inquire, and gain the sale of an implement, which would otherwise be lost for perhaps a year, because the time of its use would pass while the inquiries were being made.

Very truly yours,

A Constant Reader.

P. S.—I will add what I know under "Ingenuity." I saw in your November or December number how to toughen cut nails. Instead of heating red hot, and allowing to cool gradually to anneal them, the better way is to heat them almost to redness, and turn them immediately into cold water. Try half a dozen both ways, and you will see the difference. In driving into hard seasoned oak, dip the points in oil. This saves from splitting the wood and bending the nail.

Florence, S. C.

SUWANNEE RIVER COTTON LANDS.

Ten years ago the lands on each side of the Suwannee River yielded an average of four hundred pounds of long staple seed cotton to the acre. Rarely troubled with caterpillar, blight, or rust, the lint then commanded an average of twenty-five cents per pound in gold.

How is it now? The same lands, and some of them well manured, have on an average produced only two hundred pounds in the seed for the year 1869. And why? The caterpillar, blight, and rust, together with imperfect culture, have cut off the crops. And with a much shorter crop than before the war, the price now is only an average of fifty cents in currency.

In view of these facts a revolution has commenced in this section. Suwannee long staple cotton is soon to be abandoned. Throughout all the counties bordering the river, there is a determination on the part of farmers to plant at least half their crop in short staple cotton. Should this prove satisfactory this year, the long staple will be abandoned.

Our early springs, our lands improved by fertilizers, and better cultivation will mature the crop ahead of caterpillar. Earliest in the market of the upland cottons, paying prices will be realized, and our section begin to prosper again as before the war.

But the St. John's River and orange groves are just now the great attractions in Florida. A few years more, and the tide of immigration will sweep to the interior of the State,

and the Suwannee will be found to possess attractions little dreamed of now.

The use of fertilizers has scarcely been introduced in this section; but this year more will be used than ever before. Much less area will be planted in cotton, and much more in a provision crop during this year. What we need, is reliable labor, and a good crop year, to bring us out of debt.

A few experiments were made last year in this section with the Moina Cotton. In one instance fresh land, well manured, produced fourteen hundred pounds of seed cotton on one acre. "Bunch" Cotton and Dickson Cotton have been tried and proved very satisfactory. The proceeds of each when sold far excelled any of the sea islands raised in this country.

White Springs, Fla. A. W. K.

THE WAGES SYSTEM—GRASSES.

Mr. Editor: There are two articles in the December number, which, I think, if duly heeded and acted upon, would be worth many years' subscription.

One is by D. Wyatt Aiken, deprecating the copartnership mode of farming. On some large and fertile plantations, alluvial lands which require no manuring, the system *may* be best; but upon the *farm* proper, it is ruinous. Improvement is almost impossible; depreciation of property almost certain. Besides, it is a wrong policy; it makes the laborer too independent; he becomes a partner, and has a right to be consulted. Southern farmers will ultimately, I am convinced, have to adopt the *wages* system, as all the rest of the world does. Better begin at once.

The other article, by "More Anon," pointing out Red Clover and Orchard Grass as *the* grasses for the South, is valuable as saving those who have not yet made up their minds the trouble of doing so. I have deliberately and experimentally come to the same conclusion, and my mind is at rest upon the subject; only slightly disturbed by the mention of the "evergreen grass," of which I know nothing. Can't "More Anon" give us the *botanical* name, and tell us where the seed can be had? If not mentioned in "Flint on Grasses," I would like to know more about it. I must also take the liberty of differing with "More Anon" as to the time for sowing. "Doctors will disagree," and so will farmers; no harm, but all the better. We wish to grow clover chiefly to improve our lands. Our lands, *uplands*, are neither rich nor thoroughly cultivated. If we sow clover or small grain in the spring, on *common upland*, the summer drouth will either kill it entirely, or so much of it as to ruin the stand. Besides, we need our stubble fields as pasturage during the summer. The crab grass, which springs up immediately after the removal of the crop, is our main dependence for summer grazing; we can't afford to give it up, as we would have to do, if clover was on the ground, because the stock and the drouth would ruin it. I think it best to graze our small grain fields until fall; then, or in the winter following, turn everything under with a good two-horse plow. In the spring, say between 15th February and 1st March, harrow and sow clover seed; either alone, if to remain but a short time; or with orchard grass, if to remain longer. There is but one objection to this mode, which I can see. Many farmers, who would sow clover seed, if they had not the trouble of preparing the land for it, would neglect to do so if they had first to prepare the land. But that is no reason why it should not be received as the best and proper method. William Alston.

"RAMIE AGAIN—VIEWS OF A PLANTER."

There are few subjects that have not at least two sides, and when a planter "views" one of these, he should "view" both and all sides. The Ramie was viewed in your December number as an exceedingly valuable plant. That is one side, and one not made very clear, in my opinion, by your correspondent H. If the fibre of the Ramie is so exceedingly valuable, and there are "four cuts" a year from it, and it has been now planted in this country four years, why has not somebody beside root sellers made money from it? Your correspondent, H., understands it. He has "over a million of plants" and wants to sell them cheap and get rid of them. I have had some experience with the plants, and have watched others who have, and I heartily agree with H. I have several friends who would be glad to sell all the Ramie roots they have got, and the probability is they would be glad to pay somebody to get the "durned things" out of the ground. H. says truly "after the second year weeds are not much trouble." I will guarantee that nothing else will ever be much trouble except Ramie. Where the "*Tenacissima Bœhmeria*" once gets a good "grip" on a piece of land, that will be trouble enough for any planter who tries it as a "spirited experimenter." Why does not H. tell us who shipped that "first small lot," and what he got per pound for it, making the matter a little more definite? It is strange planters are so inquisitive, but they do like to see "cash figures" when they are invited to buy strange roots and become "spirited experimenters." I don't know a man who has got Ramie roots who wouldn't be glad to sell them. It will pay well as long as you can find buyers—for the *roots*. R.

New Orleans, La

REPORT RESULTS.

Editor Rural Carolinian:

Some time since I offered six prizes, varying in value from $25 to $75 each, for the best production from an acre of land in cotton or corn, from the use of the Soluble Pacific Guano, or Compound Acid Phosphate; the award to be made by the State Agricultural Society at its next annual meeting.

My motives for doing this are to offer some inducement to my planting friends to keep an accurate account of their experiments with my manures, so I can give this general result in my annual supplement. This will be as much to their benefit as my own; for, if every planter will do this, it will enable me to spread a large amount of valuable information before them. I have, in the many years I have supplied them with fertilizers, used every effort to give them a pure and standard article, and have yearly sent out my circulars, asking for the result, but have received but few replies. May I ask the favor that this year they will keep an accurate account, and give me the result, either good or bad?

Yours, truly, J. N. Robson.

Charleston, Jan. 8th, 1870.

MACHINERY IN RICE CULTURE.

Mr. Editor: The rice reaper and mower, called the "Rice Bird," is a perfect success. With a single mule and driver it will cut eight acres per day, and lay the rice well upon the stubble. No laborer can surpass either the cutting or laying. I obviate the bogging of animals by drying the fields as soon as the milk in the grain becomes matured. This gives from two to three weeks dry growth, and produces a heavy grain that pounds well, and matures rapidly. The drying of fields must be gradual. This process hardens the stalk, and prevents it from falling.

This machine was invented by W. G. Lupton, and is manufactured by Messrs. Myers & Co., of York, Pa. Messrs. J. E. Adger & Co., of Charleston, are their agents.

I have also used with success the rice trencher and sower of Messrs. Wagoner & Mathews. This machine trenches four rows at a time, and will plant from eight to ten acres per day with a single mule and driver. They are guaged to plant from two and a half bushels to three and a half bushels per acre. The trenching and sowing is perfect, and seed is saved by every grain being put into the trench. I cover with harrows, and in very rough land use clod crushers.

Believing the wages system the true system for a rice planter to work upon, and knowing it to be a dangerous system at the present low price of rice, unless machinery can be used in all departments of its culture, I have endeavored to introduce such machinery as will enable me to continue the wages system with a hope of success.

I am satisfied every planter will be benefited by using the trencher and sower, as well as the reaper and mower. We now require a ditch cleaner and rice-field cultivator. There is no reason why we should not plow our rice, it has been done this year with imperfect plows, but we require a better plow. Several ditch cleaners are now in use, but none are labor-saving. Some rice planter may aid in introducing a perfect plow and ditcher, and all should use every effort to introduce cheap machinery for preparing the rice upon their plantation for market. No grain is subjected to such charges;—no class of planters to such impositions as the rice planter, who has his grain pounded at public mills. No matter how many bushels it takes to the tierce, no matter how badly it is milled, he has no redress. If this state of things continue, rice planting will be given up. If every rice planter will lend his aid in getting an ingenius machinist to give this subject a thought, we will soon rid ourselves from this imposition. Yours, etc.,

Rice Planter.

SUGAR CORN—THE BEST VARIETIES.

Mr. Editor: Everybody likes roasting ears, and desires to have them early and good; but everybody does not know which, of the many varieties offered by the seedsmen, it is best to plant.

I plant first, and as early as I think it will be safe from frost, (for though it may come again if cut down, it never does so well,) *Adams' Extra Early.* The ear of this kind is small, but high flavored, juicy and excellent. It will mature, in favorable seasons, in seven weeks from the time of planting.

Crosby's Early Sweet is not quite so early, but is one of the best sorts, growing much larger than the preceding.

Stowell's Evergreen is intermediate in season, excellent in quality, and remains a long time fit for use. In this respect it has no equal, except, perhaps, the Mexican Sweet. It is hardy, productive and very tender and sugary.

The *Mexican or Black Sweet* is perhaps the best flavored of all the varieties of sugar corn, and, like the Evergreen, remains a long time fit for use. Unless the color, which is a deep slate at maturity, be considered objectionable, this is a most desirable kind, and seems peculiarly adapted to our climate.

Old Colony I have not tried, but intend to procure some seed for the present season's planting. It being a cross between the Southern white corn and the sweet corn of New England, it is said to combine the productiveness of the one with the sweetness and tenderness of the other. For two sorts, I should choose *Adams' Extra Early* and *Stowell's Evergreen.* F. M.

BROOM MAKING.

Editor Rural Carolinian:

In your January number you have an article on the subject of broom-corn. Messrs. Smith & Heny, of this place, planted a small quantity last year, and made a pretty fair crop, which they have manufactured into brooms that they sell here at the same price that similar brooms are sold for in New York. I send you one of their manufacturing, which I had made specially for you.

Yours, most respectfully,
W. H. D. GAILLARD.

Pendleton, S. C., January 18th, 1870.

[Thanks for the broom, which would do credit to any manufacturer. A good beginning in a new branch of industry.—ED.]

THE CHINESE YAM.

Mr. EDITOR: I send you a root of the Chinese Yam, (*Dioscorea Battatas,*) also some of the seed for distribution, considering it worthy of a place in the vegetable garden and upon the table. In China it is said to grow two or three feet in length, and larger than a man's arm. They will take two years of growth to attain their full size, but can be dug the first. They should be cooked as the Irish potato. The seed should be planted in March, about eighteen inches apart and one inch deep, in rows three and three and a half feet wide. The ground should be trenched and manured well, to the depth of thirty inches. The vine is hardy, bearing an abundance of fragrant blossoms, with leaves similar to the sweet potato, and should have the support of a fence or a few sticks.

EDWARD BARNWELL.

[The root and seeds came safely to hand, and we shall be happy to distribute the latter among those who desire to experiment with the plant.—ED.]

CORN PLANTING.

Mr. EDITOR: I would like you or some of your correspondents to enlighten me a little on the corn-planting question. I wish to know:

1st. Will corn planted deep be better fortified against drouth than when planted near a level with the surface?

2d. Will it, in case of a wet spring, be more apt to come up a slender plant with yellow leaves when planted deep than when planted shallow?

3d. If the manure be planted deep, will it not be too low for the lateral roots which go out after nourishment?

4th. When planted deep how long will it protract the growth? Some of my neighbors, (old fogies generally,) argue that corn is a plant that will naturally *grow upon the surface*, and will grow only as near the surface as it can get soil to root in, and planting it deep, (as Mr. Dickson advises,) will not alter the case, for when it comes to maturity it will be found near the surface. U. G.

Department of Literary Miscellany.

MODEL FARMS.

THE PICTURESQUE IN FARMING,
IN A SERIES OF LETTERS TO THE EDITOR.

You will readily acquit me, my dear Ruralist, of the charge of being ignorant of, or indifferent to, the actual and embarrassing condition of the Southern farmer and planter; how limited are his means; how difficult to procure labor and how much he has to restore; beginning almost *de novo*, the painful task of reëstablishing estates, once beautiful, which the war had left in ruins. Of course I know all these things, have felt them, and suffer with the rest of our people. I know that for the present and for some time to come, the most of us will need to toil, not for the restoration to our condition of former affluence, but for the mere bread and beef of life.

But we should work with a hope, as well as with a will, and I, for one, shall never be content to dwell in a log-house, when, with strength, courage and resolution, I may look forward to a villa. I still blend my utilitarianism with a sense of the picturesque and beautiful. I would restore my grounds and gardens; make my fountain anew to send up its diamond spray through my shrubbery; replace and trim anew my hedges; procure fresh fruits and roots and flowers, for appetite and ornament, all of the best varieties, and especially re-stock my plantation with the best varieties of stock, sheep as well as hogs, fine cattle as well as mules and horses, poultry of the best sorts for our climate, and, in brief, cultivate all the tastes and the arts, which appeal to and keep alive the sensibilities, just as earnestly as I would those arts which have reference only to animal wants and the money market. The present danger among our people is that, depressed and impoverished, feeling the pressure of a stern necessity frowning at their firesides or darkening under their porches, they will surrender themselves wholly to the *material* objects of life, and gradually forego those tastes and forfeit those sensibilities which teach the affections and minister so sweetly to the higher humanities of our nature. Forced to abandon our former luxuries, forced to walk where we once rode, to submit where we once swayed, to forego much that we so greatly

valued before, the danger is that we shall sink into a gradual indifference to things and thoughts, as well as exercises, the loss of which is so much capital lost equally to civilization and humanity. I am for cherishing the tastes as well as the appetites, and, step by step, and day by day, little by little, would exercise these tastes by the restoration of a once favorite shrub, by the pruning of neglected groves, by putting a new veranda to my cottage, by giving it fresh paint, getting myself a few fine pictures for my walls and restoring my fence of paling, in place of the miserable worm fence which now deforms the close, and especially in cleaning up, grading and rolling the several avenues which lead to my dwelling. And I hold all this to be good morality, the exercise of which must constitute a large part of that domestic education which rears one's children in virtuous and inoffensive tastes and sentiments.

In the hope that your feeling and thought on these subjects are in unison with my own, and in the farther hope that, through you, we may influence the tastes of others of our still suffering but bravely working people, I propose to give you a sketch of one of the loveliest and most perfect model farms I have ever seen. The proprietor, though a New England man, is a very dear friend of mine, and is one of the few surviving gentlemen of the old school, who, unlike the present spurious representatives of the race, knew how to love and fight for liberty, and keep good faith with their friends and neighbors.

Let me now, with the aid of a companion who helps me in this work of description, take you about five miles out of the City (proper) of Boston. Here, on the line of the Hartford and Erie Railroad, we find a region, in West Roxbury, which will probably become, ere long, the site of a grand central park of Boston. The City Fathers have already been prospecting the precinct with reference to this object. Nature and art both point to it as singularly suitable for a great city pleasure ground, and metropolitan park, and zoological garden.

This region is beautifully diversified. It possesses ponds, brooks, groves, and a sightly belvidere in the shape of Wellington Hill. Art has already done much for it. About seventy-five acres of this tract form the estate of Hon. Arthur W. Austin, of West Roxbury, and every rod of it bears marks of his rural taste, agricultural intelligence and liberal outlay. There is no more pleasant suburban excursion of a fine October day than to Mr. Austin's farm. It is the navel, as it were, of the most beautiful suburban region of Boston, and in the matter of suburbs, no other Northern city can approach the "Hub." Summer visitors from all parts of the country agree to this proposition without a dissenting voice. And it may be questioned whether any European city can boast of any equally beautiful and highly cultivated environment. Mr. Austin's farm is mostly enclosed by a mile and a half of stone wall, built of rocks blasted from the premises. The rocks composing this most solid piece of rural masonry, furnish a study for the geologist in their conglomerate character. The builder of this wall was descended from a race of wall-builders dating back three centuries, and perhaps to the construction of the Chinese wall itself. There is an avenue of dwarfed fruit trees of various kinds at the entrance of the estate, which bear well, and at the same time do not obstruct the view.

As you pass through this beautiful avenue, you are pleasantly surprised to see on pendant pear and apple, some brief inscription in printed letters. Now it is the year, say 1870; now the name of some eminent man; now of some sweet damsel; Mary or Jane, or Carrie or Florence—all done upon the fruit with no abrasion of the skin, with no knife or scraper, but by a process the discovery of which is due to Mr. Austin. He discovered that where a leaf fell or rested upon the fruit, the part so covered was of different color from the rest. Upon this he procured printed letters, cut out of paper, pasted them upon the pear or apple, which soon took the desired inscription; the letters being distinctly formed in brown, while the rest of the fruit presented its natural color of green or red.

The dwelling which we now approach was built in 1846. It is a neat, unambitious, framed structure, ample in accommodations, highly finished within and well and handsomely furnished, its walls showing several fine paintings, family portraits, and some which particularly claim attention. One of these, a portrait of Col. Whiting, of revolutionary memory, was painted by no less a person than the famous Kosciusko, who, to judge by this specimen of his talents, must have been a good artist, as well as good patriot and soldier. There is another noticeable portrait, that of Ben Austin, a distinguished political writer of his day, and of the democratic school, at a period when it kept good faith with its people. Ben Austin was the father of that Austin who was shot by Selfridge, and so, indirectly, the cause of one of the greatest sensations which ever disturbed the proprieties of the solid men of Boston.

Leaving the dwelling, I must now take you to see other sights, my Ruralist, which to the eye of farmer and poultry fancier, are, perhaps, of more absorbing interest.

To the fancier of poultry, indeed, whether useful or ornamental, Mr. Austin's premises offer a treat such as can be experienced nowhere else in this vicinity. In fact his farm may be called a vast poultry-yard and aviary, where birds of every kind, whether wild or domestic or half domesticated, whether

aquatic or otherwise, can find congenial haunts and a free range. There are three artificial ponds or lakelets on the premises, on whose waters fleets of Bernicle geese and domesticated wild geese may be seen floating; to say nothing of ducks of many varieties, and several swans. There is not a finer collection of English game fowl in the Commonwealth, than can be found on Mr. Austin's premises. It is singular that our poulterers and fanciers of fowls do not keep more of these game fowls. They are the finest and most elegant of their species. In England, at the agricultural fairs, the coops containing these fowls are always the greatest objects of attraction. A leading foreign authority on poultry, says "that the old exploded practice of cock fighing did one good thing; at least, it carried out, under man's supervision, the principle of action which has been so ably described by Darwin, as 'the struggle for life.' Those game cocks, formerly, which proved the strongest, most active and courageous, and struck down their antagonists, were preserved as the progenitors of their kind, and the process of 'selection' was carried on for generations, till the ultimate result now is that the English game fowl is unequalled in elegance of form, and universally regarded as the highest type of gallinaceous beauty."

With the hope of resuming this description on another occasion, we will now bring our walk and our talk to a close.

W. Gilmore Simms.

ASHES OF ROSES.

Somebody promised, before June closes
"I will be with you to gather the roses;
Failing my share of the blossomy treasure
May lavished on you in bountiful measure:
Missing the dew and delight of the Spring,
June, I affirm, shall atone for the thing;
When the sweet Summer is red with her roses,
Look for my coming, or ever June closes."

Somebody else, by her casement leaf-shaded,
Watched till the roses had blossomed and faded:
Counted the beautiful days as they vanished,
Hoped until hope from her bosom was banished.
When the fair queen of the Summer was dead,
Sighing, she turned from her window and said,
"June will return and new roses discover,
But, oh! for the June of my heart that is over."

[*M. E. Bradley, in Appletons' Journal.*

A TRIBUTE TO WADE HAMPTON.

The *Chicago Times*, in a long article suggested by General Hampton's admirable address at the Georgia State Fair, pays the following well deserved tribute to our distinguished fellow-citizen. After quoting the passage in which General Hampton alludes to his old slaves as still cultivating the land on which they have lived for years, the editor adds

"It is not strange that Wade Hampton should so deal with his negroes, and speak concerning the treatment the race should receive in the South. He has been guided by a cultivated intellect and a kind and honest heart, and his ideas of the course which should be pursued toward the blacks, and the friendship he feels for them, are shared by the majority of those who are generally termed Confederate leaders.

"In our late civil war, Hampton was prominent among those leaders. He was the last to yield to the Union armies. He fought them with a skill, courage and persistency which extorted their admiration. He only yielded when overwhelming numbers, and starvation in his little band of followers, taught him that further resistance would only result in a useless sacrifice of life. When he surrendered, he said he would implicitly obey the rightful authority of the Federal Government, and in all things conduct himself as a true and faithful citizen. He was entitled to belief. His whole life had proved him to be an honest man. He believed in the doctrine of secession, and braved death on many a well-fought field in its defence. When it was overthrown by force of arms, he manfully accepted the decision, and pledged himself, in good faith, to abide by it, and accept all just consequences resulting from it."

WE SINK OR SWIM TOGETHER.

A LAY OF ENCOURAGEMENT.

I.

Now row, my gallant brothers, row,
Give way with will and sinew:
These seas that rise before our prow
Will try the muscle in you!
But what's the fear if hearts be true?
We've but to pull together—
True hearts and hands, all bent to do,
Will bear us bravely, bear us through.
And save the ship, and save the crew,
In spite of wind and weather!
Row, brothers, row! row, brothers, row!
One long, strong pull together!

II.

And cheer with courage, as ye row:
What though the tempest brewing,
Works fate for many a brother now,
That drives, head on, to ruin?
'Tis not for us to shirk or shrink,
Though out in fearful weather:
We know some comrade's doom'd to sink,
And we, too, hang on Danger's brink;
But fear ye not! don't stop to think!
Pull bravely all together!
Row, brothers, row! row, brothers, row!
One long, strong pull together!

III.

Bend to your oars, good brothers, row!
Give way with hearty courage!
Death's just as nigh on land as now,
When seas are wolves at forage;
And Heaven's as near on sea as shore,
However wild the weather:

We've but to ply the manly oar,
And shut our ears to ocean's roar,
Nor heed the Fate, behind, before,
And bravely pull together!
Row, brothers, row! row, brothers, row!
One long, strong pull together!

IV.

Bend to your oars, dear brothers, bend!
We may not 'scape this danger—
But times of peril prove the friend,
And we've escaped even stranger.
'Tis something of God's law, I think,
When out in angry weather,
And men are dashed on Danger's brink,
And all seemed doom'd, and many sink,
That one and all their hands should link,
And bravely pull together.
Row, brothers, row! row, brothers, row!
We sink or swim together!

[Wm. Gilmore Simms.

Hygiene and Household Economy.

LETTERS FROM A HOUSEKEEPER.

II.

My Dear Carrie: Our upper rooms correspond with the lower ones. The one looking out upon the street I had nicely painted, whitewashed and cleaned. White muslin shades, some good matting for the floor, and a "chamber suit" of furniture which sufficiently fills the room, yet leaves plenty of space, gave it a comfortable cosy look at once. A few small and not expensive engravings on the walls, and vases, etc., on the mantle, add, I think, an air of taste and refinement. I hate bare walls.

It is a cool-looking room in hot days, as it is shaded not only by the window blinds, but by the broad veranda. This is our Southern idea of comfort.

I have on my bureau a nice linen toilet cover, a gay cushion of scarlet stuffed with hair, and two crochet mats for ornaments. I save "snarls" and loose hair generally, for which purpose I have a discarded paper collar box in use. I have a hair-pin box, which is very handy, and may be worth describing, for the benefit of others. I learned how to make it from "*Hearth and Home.*" Here are the directions:

"Take a collar box, remove the cover and in its place baste tightly over the top a round piece of silk crochet-work (like a small mat, of ordinary tight crochet-stitch) made of shaded material, and without a border. Then take mohair dress braid or narrow ribbon of any bright color that will look well with the top, and box-pleat it. This pleating must then be sewed around the box in two rows, so as to cover the sides completely, and hide the edge of the crocheted top. This completes the holder. The hair-pins are stuck in the top, just as pins are put in a pincushion, only they are pushed but half-way in. It is a very useful little affair, and is quite an ornament to the toilet table. The cost is about twelve cents. Measure *seven times* around the box to find out the quantity of ribbon or braid required for two rows. If you do not know how to do the ordinary crochet-stitch, you may use a bright-colored piece of flannel with strong lace stretched over it, and if you cannot get the braid or ribbon for the side, you may cover around the sides of the box with the flannel, and hang over it a full frill of lace or muslin to match the top."

You remark in your last letter that "it is all very well to talk about how to cook sweet potatoes when you only get a taste about once a year." You make your apples, cider and butternuts take their places.

You know how to prepare nice dishes from your apples, as I have full proof, but let me add a few delicate ones which I have tried, and which may be new to you. The first is from a dear friend, who, like myself, is a beginner in the art of cooking:

Apple Sauce.—Stew the apples and sweeten them; rub through a sieve; beat the whites of three or four eggs with as many tablespoonsful of powdered sugar, rather stiff, and pour on the apples; set in the oven for a few minutes until it is a light brown, then put away to cool. It makes a delicate dish for tea.

Browned Apples.—A delicate dish is made by paring tender juicy Northern apples, quartering them; arranging them on a plate; adding a little water and sugar if needed, and baking them quickly in a hot oven. I call these *browned apples.* They can be served on the plate in which they were baked.

Stuffed Apples.—A more showy dish is made by coring (with a corer) the whole pared apples, stuffing them with sugar and stewed raisins, and baking quickly in the same way. Pile them up before serving, *en pyramide*, and they will be an ornament fit for any table.

Apple Roll.—Make a paste with one-fourth of a pound of butter to one of flour; mix with water, not very stiff; peel and slice rather thickly tart apples; roll the paste very thin, or as thin as the bottom crust of a pie, spread the apples on the crust so as to cover it, dredge on a little flour, and roll tightly as possible. Cut the ends even, and put it in the steamer, or wrap it in a thick cloth and

boil it; or it may be baked. It will take one hour steady cooking. Serve with butter and sugar. Cut in thin slices from the end when serving.

APPLE PUDDING.—I made a simple and delicious apple puddling of three good-sized apples. Pare, slice and stew them, and when cooked, add a little cold water; have a batter made of a pint of sweet milk, one or more eggs, two tablespoonsful of flour, four tablespoonsful of sugar and a little salt and nutmeg; beat all together and pour over the hot stewed apples; stir all together and bake a light brown.

Yours, as ever, MARIE.

COOKING IRISH POTAOTES.

MR. EDITOR: You ask the ladies to contribute to your Household Department, and since "Marie" has set the example, I am emboldened to send you a brief note.

American cookery is proverbially bad. There ought to be a reform in our kitchens; and while you are "reconstructing" agriculture, I think the ladies should get up a similar movement in their department. Who will take hold in earnest in this matter? Health and economy both demand a better *cuisine*. As a slight contribution toward this result, I offer the following hints on cooking Irish potatoes.

Irish potatoes are best *baked*. They should be washed perfectly clean, and baked quickly in a hot oven, but without burning in the least. Each potato should be pressed as taken out of the oven, so as to break the skin and allow the steam to escape, which leaves them much more mealy than they otherwise would be. Next to baking, steaming is best. They should steam till the skin cracks (as it always will if the potatoes are good) and be eaten immediately, as they soon become solid. In *boiling* potatoes, pour the water from them before they are quite done. A few spoonsful of cold water should then be poured over them, and the kettle placed upon a hot part of the stove till the potatoes are wanted. Never place a close cover over Irish potatoes after they are cooked, as it tends to make them wet and hard.

MRS. L. C.

DEATH IN THE FRYING-PAN.

We have read of "Death in the Pot." The Columbus (Ga.) *Enquirer* suggests that here, in the South, at least, he lurks in the frying-pan. The editor says:

"The Southerner's standard food is a piece of bacon fried; the fat taken and with flour or meal mixed into a heavy mass and consigned to the inevitable frying-pan, and out comes a lump of leathery looking something, which the stomach of an ostrich could not digest. Give him a chicken, and what does he do with it? Cuts it up, and into the frying-pan it goes; after being slowly simmered until hard, it is put into a deep dish and grease poured over it, and what is not soaked up in the chicken is made way with by soaking his frying-pan bread in it. Give him a rich, juicy steak, and into the frying-pan it goes, and is slowly simmered and simmered until no knife will cut it, and then eaten with heavy bread soaked in the remaining fat; and thus good, wholesome food, in quantity sufficient to afford a wholesome meal for a French artisan's family, is by the frying-pan process rendered not only barely enough for one man but converted into a slow poison and a frightful source of disease. Scarcely a day passes but some poor sufferer applies to me for relief from 'frying-pan disease,' which relief I am unable to give without an entire change in his or her habits, and, unless such change is effected, whose appropriate epitaph will be

'Died of a Frying-pan.'"

No wonder we are a sallow, bilious, dyspeptic race! More fruit and vegetables, and a better system of cookery, would do more to improve the health of our people than all the doctors in Christendom, and the reform should begin immediately, and at *the frying-pan*

RECIPES.

TO FRY OYSTERS.—Wrap them in a dry cloth until the surface moisture is absorbed; then take them from the cloth, put them in the white of egg, (slightly beaten;) from that into pulverized cracker; lastly, for frying, heat together as hot as possible, and not scorch; equal parts of butter and lard, and fry them rapidly.

APPLE MERINGUES.—Fill a small, deep dish half full of stewed apples, or any preserved acid fruit, (peaches are very nice,) and pour over an icing of the beaten whites of six eggs, and six tablespoonsful of white sugar. Bake slowly from one to two hours. It can be eaten cold or hot.

—— Oil of hemlock will heal a burn and leave no scar. It is also one of the best of remedies for a flesh wound or an old sore, on man or beast. No inflammation nor proud flesh can survive where it is applied.

AN IMPROVED WHITEWASH.—To make whitewash almost equal to paint, take one peck of lime well slacked in hot water, to

which add one pound of sugar, two pounds whiting, two pounds rye flour, and one pound of dissolved glue, all well mixed together. Then take strong brine made from rock salt to give the mass consistence to apply with a brush.

—— Equal parts of laudanum, alcohol and oil of wormwood make an excellent liniment for bruises, etc., on man or beast.

HEALTH AS A DUTY.—Physical health, the *Herald of Health* says, is the first and highest duty of life, because the proper performance of all other duties depends upon it. It is a duty we owe to our Creator, to ourselves, and to others. Physical health is at the foundation of mental and moral health, of happiness and usefulness. Without health life must prove a failure.

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Sorghum and its Uses.

A few more words about sorghum. Many persons say, the fodder from this prolific crop is valueless. As well might the crop itself be abandoned as to lose this portion of it, for really it is the best, most nutritive long forage I have ever grown. The blades being pulled before the crop is thoroughly ripe, are, of course, very full of saccharine matter, and being much thicker and tougher than the blades of Indian corn, they require much longer time to cure. Hence, when pulled from the stalk, the blades should be laid by the handful on the bed, without tying, for twenty-four hours; then tied in "hand-ties," and, in twenty-four hours more, four of these "hand-ties" put together to make a bundle. Weather permitting, these bundles should be placed in hand stacks for twenty-four hours, and then having gone through a sweat, the stack should be opened and aired for a day before being housed. If treated in this way an idle mule will fatten on this fodder, and sheep will keep in good order all the winter without other food.

If the bunches of seed, or "pompoons," as they are cut from the stalks, be thrown under shelter for a fortnight, they will heat thoroughly and become more easily threshed thereafter. If cleaned as threshed, and as needed ground into meal, no better food can be had for cows, sheep or hogs, when boiled with any other distender. In the winter of 1865, I knew of 12,000 lbs. of net pork being slaughtered from a single pen, where no food whatever was used to within five days of the butchering, except pumpkins and cane seed-meal boiled together. Mules will not willingly eat this meal, though I have had them to soon become accustomed to it, and eat quite heartily of it, and keep fat on it too, which was better.

The "begasse," or crushed cane, I have found but little use for, though it is no more valueless than would be the crushed stalks of any other crop. I have "run it through" the stables with no advantage, and composted it with stable and cow-house manure with but little better success. To cover galled

spots so as to prevent washing, and shade the earth so as to encourage the growth of weeds and blackberry bushes, are, I think, its most appropriate uses. To rot it in bulk and apply it thus decomposed as a manure, is throwing away labor.

The green scum taken from the boiling kettles is a nutritious food for hogs, though they soon reject it as distasteful, and refuse to eat it all, if surfeited upon it at first. These skimmings are said, also, to make capital vinegar. I cannot speak of this from experience, as I always made other use of mine. If allowed to ferment for a few days and then distilled, they make a spirituous liquor almost equal to alcohol. I have had it distilled as clear as spring-water, and so alcoholic that it would burn in a chafing-dish lamp.

If sorghum can be grown on good land and cultivated properly, it may be cut by the 1st of September, in the latitude of Columbia. If the month of September be wet or even seasonable, by the 1st of October the shoots from the stubble will grow from two to five feet high, and furnish one of the best pastures of the fall. Care should be exercised, however, in turning cattle, sheep, or mules upon this stubble, as they will eat heartily enough of it to injure or kill, especially if such animals are in the condition most of them are when prepared for a good pasture—empty bellied. I allow mine about an hour the first day, two hours the second day, four hours the third day, and then leave the gap down.

Should the sorghum grower not need this pasture, he can find no field so well prepared for an early, small grain crop, and this is an additional reason for cultivating the sorghum cane, even if syrup is not made. Any acre of fertile land will make one-half more bushels of clean seed than it will bushels of corn, and the cane seed is worth at least half what corn is per bushel to any careful and provident planter. The cane fodder is worth double per acre that corn fodder is, on the same land. Hence, I say, the sorghum crop is a remunerative one, if grown simply for seed, fodder and pasturage, because in addition to this it furnishes a cultivated surface upon which to sow an early fall small grain crop. And any planter who will try it, will find oats sown in September, from three to five pounds per bushel heavier than the same oats sown in February, besides furnishing excellent winter pastures for ewes and lambs.

From fifteen gallons of the green juice of sorghum, a gallon of pure alcohol can be distilled, and from ten gallons can be made one gallon of as pure and palatable liquor as can be made from any of the grains, despite the prejudice created by the opaque and nauseating stimulants manufactured from it during the war. On more than one occasion, just after the war, have I had the pleasure of seeing friends enjoy my hot sorghum punch, while at the very same time they were abusive of "that vile stuff, called sorghum whiskey." As likewise I have had them to relish with a gusto, batter cakes and sorghum syrup, when assured for a purpose that they were eating Florida syrup.

Sorghum, since its introduction into our country, has been the worst used and best abused crop grown in the South, and yet, I believe, it is destined

to survive its abuse, and outlive all prejudices. As long as ten gallons of its juice will make a gallon of syrup, and that gallon of syrup make six pounds of good sugar, it will never be abandoned by the lovers of good living. I have never made sugar myself, but have often had the syrup to granulate, and only needed a centrifugal mill to manufacture beautiful sugar. Considerable quantities of sorghum sugar were made in Abbeville the past season, and a jar of delicious syrup from this County, granulated beautifully while on exhibition at the State Fair in Columbia. My opinion is, sugar-making will be less profitable than simple syrup boiling, beyond what is necessary for home consumption.

Amongst other objections to this crop is the one of its exhaustive nature. That it is not exhaustive has never been claimed for it, nor will such an argument ever be advanced by any sensible man in favor of any crop. A crop that does not exhaust the land is valueless, and I often think just in proportion to their exhaustive nature are crops valuable, and *vice versa*. But certainly the variety of uses to which the sorghum crop can be applied entitles it to our favor, and if half the planters of the country would invest as liberally in preparing for the syrup crop as they do for the cotton crop, we would have less of sorghum prejudices, enjoy more home-made sugar and syrup, and get higher prices for cotton. A planter might as well attempt to finger pick a cotton crop as to expect to make cane growing profitable by using a one-horse wooden mill to grind the cane, and a wash pot as a boiler, as many of our loudest disclaimers against sorghum did during the war.

But enough. D. WYATT AIKEN.

The Preparation of Land for Cotton.

Mr. Editor: The experience of the last four years has forcibly impressed upon me the absolute necessity to success in cotton planting, of deep plowing and thorough trituration of the soil in preparation. Without it the clean, shallow cultivation that should follow is difficult to effect; and manuring will not pay as it should. Possibly some of your readers may be interested in examining the details of these crops as taken from my plantation book, in which they were recorded at the time with care and effort at accuracy.

It is necessary to premise that all the crops were taken from a field of 128 acres of good pine land in Barnwell, varying, in spots, from "mulatto" to "sandy" soil. The field had been cleared five or six years previous to 1866, and had lain fallow in 1865 and 1864. In planting it was kept divided each year into the same "cuts," arranged as nearly as possible according to the varying character of the soil. In estimating the profit of the manure used on the money invested in it, an average price of cotton for the three years was taken, so as to eliminate the uncertainties of the market.

Year.	Number of cut.	Preparation.	Manures.		Cultivation.	Growth of weed in inches —average of field.			Yield each cut per acre.	Ave'ge yield of whole field per acre.	Per cent. of profit on manure.	Remarks.
			Kind.	Value per acre.		4 July.	1 Aug.	1 Sept.				
1866.	Whole Field.	Laid off, bedded out and planted. Land received but one breaking.	None.		Hoe and sweep work badly done, and in consequence of grass bar sharing resorted to at second working on larger part of field. Laid by grassy.				lbs.	lbs. 433		Cool and rainy in spring and early summer. Dry afterwards. No rust. No caterpillar.
1867.	Whole Field.	Ridged by throwing five furrows together in old alley. Middles broken out after planting.	Peruvian Guano.	$ 4 20	Hoe and sweep work again failed to keep crop clean, and bar sharing again resorted to. Laid by grassy.	16	30	48		540	.52	Very wet in June, July and August. Caterpillar 4th September; damage inconsiderable. No rust.
1868.	Cut 1	Bedded and rebedded.	Dickson's.	6 00	Worked with hoe and sweeps. Kept clean and laid by clean.	16	35	49	645	746	213	Rainy spring; subsequent seasons favorable. Caterpillar 1st September; damage probably one-fifth of crop. Little rust.
	" 2	Do.	Peruvian.	6 00					689			
	" 3	Do.	Cot'n Seed	6 00					754			
	" 5	Do.	Do.	6 00					740			
	" 6	Do.	Do.	6 00					870			
	" 4	Ridged, as above.	Dickson's.	6 00					538			
1869.	Cut 1	Flushed before bed'ng	Dickson's.	10 00	Worked with hoes and sweeps, but not kept as clean or laid by as clean as last year.	19	25	37	789	644	.26	Spring cool, dry and ten days late. June seasonable. Excessive drouths later. Damage from caterpillar slight. No rust, but a general blight of cotton.
	" 2	Ridged, as above.	Do.	10 00					553			
	" 3	Do.	Do.	10 00					530			
	" 4	Do.	Do.	10 00					797			
	" 6	Do.	Do.	10 00					644			
	" 5	Ridged, but also subsoiled.	Do.	10 00					604			

It will be observed—

1. That the preparation and culture of the first two years was, as nearly as possible, alike,—both imperfect. One year the land was manured with a small amount of a commercial fertilizer, the other not. The manured year the growth of the weed was as large as the best year of the series, the yield of cotton not in proportion to weed, and the investment in fertilizer paid 52 per cent.

2. The third year the cultivation was rapid, shallow and clean, and the whole field, except a small cut of three acres, a spot of loose sandy soil, was prepared by bedding into the old alley with turning ploughs run as deep as strong, one-mule teams could pull them, the manure then put into the new water furrow, and four furrows thrown upon it, seed planted, and before it came up, rebedding completed by splitting out the middles with straight shovels. With an increase of 42 per cent. of fertilizer, an increase of 73 per cent. of seed cotton was obtained over previous year, and with 40 per cent. less fertilizer than the next year, 48 per cent. more cotton was had than then obtained. The manure, too, this year paid 213 per cent., a handsome return on the investment. The growth of weed, it will be noticed, was about the same as previous year.

3. The fourth year the cultivation was similar to the third, and nearly equally thorough, but only one-fifth of the field was as thoroughly prepared as the third year. This was cut 1, which was flushed before bedding, probably a better mode of triturating the soil than bedding and rebedding. Cut 5 (another fifth in area of the field) was prepared after Mr. Dickson's plan of running the first three furrows in the old alley, with a straight shovel, followed in each furrow by a longer and narrower plough subsoiling, and then bedding out on this list. The expenditure for manure was much the largest of the series of years. With average seasons (or nearly so) till 4th July the growth of weed on that day averaged better than previous years. Subsequent growth during the drouths that ensued, and the yield of cotton were not in accordance with increase of manure, and character of cultivation. The profit on the investment in manure was but 26 per cent. Now notice cuts best prepared. Cut 1, prepared as in 1868, gained 122 pounds on that year. Cut 5, ridged but subsoiled, lost 114 pounds on previous year, while cut 5, adjacent to it, lost 226 pounds. These two last cuts were manured each year with similar fertilizers. It will be further observed that cut 4, ridged both years, increased this year over its yield of 1868, by 259 pounds. This was probably due to the character of its soil, before alluded to. Very light, sandy lands are more decidedly pulverized by one breaking than those of closer texture, and such land maturing its crop in a shorter period of growth, the crop was nearer made, and had had most benefit from increased manuring before drouths set in.

The "Time Book" of the plantation shows that counting in days' work, it took 15-100ths less labor to make the crop of 1868 than that of 1867, and 17-100ths less than the crop of 1869. Labor expended in preparation is compensated by labor saved in cultivation.

Of course, the seasons had much to do with foregoing results. They are noted in the column of remarks in the table, and the reader must make such allowance as his judgment prompts for their effect.

I am inclined to think that on such land as the field described, while subsoiling has its merit, the pulverization and trituration of the soil obtained by two plowings before planting has decided advantage. To combine the two would probably be as near the perfection of preparation as it is practicable to attain in field culture upon a large scale.

24th January, 1870. LOW MIDDLING.

Since writing the foregoing, I have seen in the public prints a report by Colonel Lockett, of Albany, Georgia, of a yield last year of 27,206 pounds of cotton from six acres of land. The application of manure was moderate for such results; but the land was prepared by flushing, and then running a subsoiler in the first three furrows of the bed. L. M.

Earth-Closets—Fertilizers.

The earth-closet, invented by the Rev. Mr. Moule, of England, is intended to be a substitute for, and a great improvement on, vaults and water-closets. It is based on the fact, that dried earth—dirt—a mixture of clay and mould —not sand—is a perfect deodorizer, and altogether superior to the usual disinfectants. The apparatus comprises a receptacle under the seat, removable at pleasure; a reservoir in connection, at the back, for holding the dry earth, and an arrangement for throwing the latter in requisite quantity where needed. It is made either with a lever to "pull up," or is "self-acting." The former, depositing the dirt properly, by pulling a handle, and the latter, effecting the same purpose of itself, when relieved of the weight of the person. It is simpler than the water-closet, when well constructed, the self-acting never getting out of order, and may be made by a handy mechanic and a tinner at the cost of only a few dollars. The earth requires to be well dried and sifted, under a fire, or on a kiln prepared for it, or mixed with one-third of ashes, or sifted ashes alone may be used, but these are scarcely abundant enough. The consumption for a hundred persons would be about two tons a week. But the dirt, after lying under shelter a week or two, may be redried, and its use repeated as often as eight times, perhaps oftener, before its power of absorption would be exhausted. And from first to last there would not be a particle of offensive exhalation. This commode has been used with great satisfaction in sick rooms, also for schools, prisons, hospitals, hotels, and private dwellings, within doors and without. It may be made fixed or movable. The contents may be taken away daily, or weekly, or monthly, depending on its size and convenience of the occupant, while occasioning no sort of annoyance, nor any more trouble or offence than the removal of the ashes from the hearth.

The system has been in successful employment for several years in a number of villages in England, and on the estate of Baron Rothschild, with a population of 800, where a man and boy with a horse and cart performed all the offices of its requirement. It is applicable to larger places—in towns and cities—diminishing, if not altogether avoiding, sewerage—preserving in purity the atmosphere around yards, gardens, alleys and back streets, often so disgustingly disagreeable to the passers by, and preventing the escape of those noxious gasses which are sometimes 'generative, and always promotive of infectious diseases.

But, independently of sanitary considerations, and of the comfort and convenience in the use of these closets or commodes, there may be taken another view of this subject, of the highest importance.

The fertilizer, technically called Poudrette, while manufactured largely in other countries, and to some extent at the North, has not heretofore found much favor among the composters of manures at the South. Its great value has been readily admitted by those acquainted with its nature, and with the effect of its application to land, but for certain irrational reasons it has been utterly wasted with a kind of scornful neglect. The time has arrived when it becomes us to hoard carefully and bestow on the soil every element that affords nutriment to plants. Our exhausted fields and empty purses admonish, and the fair prices of our staple and other productions encourage us to the effort. It will, therefore, be gratifying to the masses to learn, that all the objections formerly existing to the manipulation of night soil, have been completely obviated by the invention of the earth-closet. This mechanism performs the entire operation promptly, simply, cheaply, with thorough effectiveness, without any loss whatever, and without the least offence to any of the nerves of the most fastidious.

It has been estimated that if *one-fifth* of the population of Great Britain would adopt and carry out this system, a million of tons of manure, equal in intrinsic worth to guano, would be annually made. It is said that New York City loses annually 7,000 tons of phosphoric acid by the waste of its night soil, and the United States at large fully 200,000 tons, valued at over $50,000,000. How easy for the City of Charleston, and other cities and towns of South Carolina and of the South, to check such drain of the elements of prosperity, which acts doubly, by the virtual destruction of this fertilizing agent, and by the deficient productive ability of the land for the want of it. Companies might be formed on an adequate scale, to furnish every dwelling and all public houses and institutions with kiln dried earth, and remove periodically the contents of all the earth-closets. The owners and managers would, no doubt, supply themselves with the apparatus, and as cheerfully yield the products for the great boons of cleanliness, and comfort and health, which would enure to them. These companies, too, would derive a handsome—perhaps an enormous—profit from the sale of a fertilizer so cheaply procured and easily preserved, so rich in all the properties of vegetable sustenance, equal, in fact, to Peruvian Guano, without its transportion of 15,000 miles, and its exorbitant

cost of $100 per ton. Or, individuals over the country and elsewhere, acting each for himself, might, with little cost and trouble, reap all the benefit of the system, making his garden bloom like the rose, and his fields surpass in fertility the valley of the Nile. M. C. M. HAMMOND.

Beech Island, S. C.

Sources of Plant-Food.

This is a subject of great interest to the practical agriculturist, as well as to the chemist; and we are glad to see scientific men, like Professor Charles Upham Shepard, Jr., and others, giving it so large a share of their attention. Science and Labor should go hand-in-hand.

Professor Shepard's late lecture before the Charleston County Agricultural and Horticultural Society, embodied a very lucid exposition of the subject of vegetable nutrition. We are sorry that our limited space permits us to make only brief extracts, where we would gladly publish the entire paper:

ORIGIN OF CHEMISTRY.

The ancient and sacred Scriptures inform us that the sons of God or angels becoming captivated with women, descended from heaven, and took up their abode with them; and, finding willing ears to listen, they taught them the nature of all things, whether sacred or profane. For these sins they were denied reädmission to heaven. Chema is the first of their traditions respecting these arts. The book itself they called Chema—hence the art is called "Chemia." Such is the version of Zosimus, the Panapolite. We, the humble followers of Chemia, bearing steadfastly in mind what we owe to the fair sex, have ever striven to offer them the results of our toil and study. To-day, woman delights in the magnificent colors and delicious perfumes which the chemist has, as a debt of gratitude, laid at her feet.

ANCIENT AGRICULTURAL CHEMISTRY.

Few, and generally of little consequence, were the chemico-agricultural experiments and treatises prior to the nineteenth century. Here and there, however, are to be found opinions whose value we of to-day know how to appreciate. Bernard Palissey, of Chapelle-Biron, (born in 1499,) rightly observed that the soluble salts in any manure alone determined its value, and that these could restore the exhausted fertility of any soil. Towards the close of the last century, Ruckert considered the inorganic substances as the essential food of plants.

PLANT-FOOD IN THE ATMOSPHERE.

Vegetable life can attain full development planted in purely mineral substances, and watered with pure, distilled water, if it be exposed to the atmospheric air, and the kindly rays of the sun. Let us take any normal soil, and subject it to such a heat as is competent either to volatilize the organic ingredients, or to convert them into mineral matter, and then add a smaller quantity of a nitrogenous inorganic substance, as the chloride of ammonium, (sal ammoniac,) or the nitrate of potash, (saltpetre,) and planting a vegetable germ in the mixture, moisten the soil, which is purely mineral or inorganic, with distilled water. Exposed to the sunlight and to the atmosphere, the plant acquires a healthy growth, and yields an abundant fruit.

Now carbon forms nearly half the weight of dry vegetables; and the two elements which form water, oxygen and hydrogen, compose by far the greater part of the remainder. The oxygen and hydrogen, which, united with carbon, form nearly all the mass of vegetable substances, in these occur in about the same proportion as they exist in water.

After this observation, our curiosity is aroused to discover the sources of this important ingredient of the plant; and we are led to believe it to be found in carbonic acid—since that is the only compound of carbon which is present to any extent in the atmosphere.

* * * All plants, through their leaves and other green, juicy parts, abstract from the surrounding air this carbonic acid gas; and that, all other sources of carbon being carefully closed, the plant can attain the most beautiful and luxuriant growth, provided it have access to the air.

In 1771 Priestly observed that air which had become unfit for respiration or combustion, was improved by contact with green leaves under the influence of the sun's light. Next Ingenhouse, in 1779, showed that it was only during the day time, and under the influence of the sun's rays, that the green portions of the plant emitted oxygen gas, and that, on the other hand, it absorbed the same gas during the night. Furthermore, that those portions of the plant which were not green, as the blossoms, fruit and roots, did not exhale oxygen, even in the sunlight, but, on the contrary, gave off carbonic acid gas.

WATER AS A SOURCE OF PLANT-FOOD.

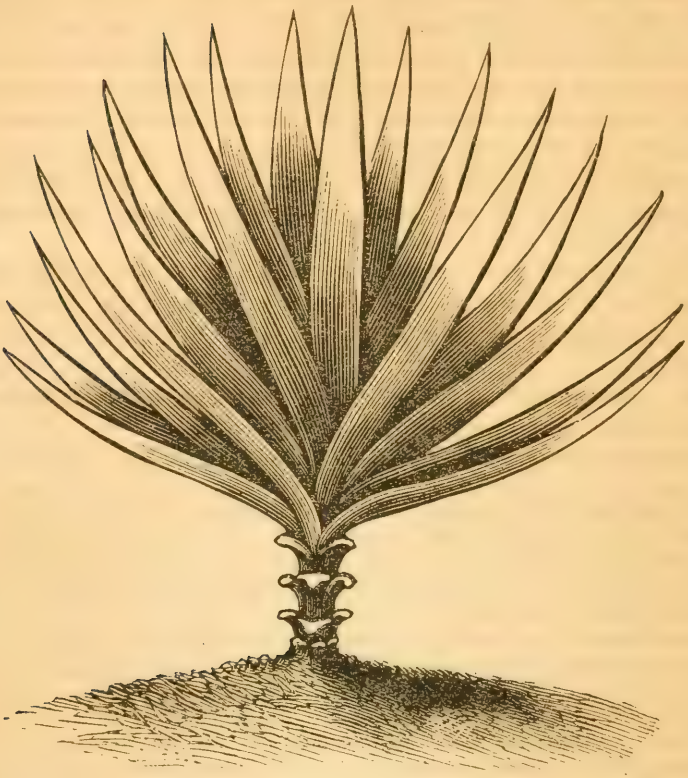
On subjecting a green, growing plant to analysis, we ascertain that at least four-fifths of its weight is water. Without moisture about the roots it is impossible for the plant to obtain the necessary elements of food. Without water these chemical processes are impeded or entirely interrupted on which the vitality and growth of the plant depend. The rootlets abstract from the soil the moisture contained in it, and, dissolved in the water, is the food of the plants.

The little pores through the vegetable tissues are those canals, stretching between the points of supply and demand, on whose placid stream are conveyed the materials which provide for the structure of the plant and the formation of the fruit. Most of the water, drawn onward and upwards, by the force of capillary attraction, passes unchanged through the plant. Its burden of food, deposited at the needy spot, its functions is completed. It escapes from the leaves in the form of aqueous vapor. Thus an acre of cereals, according to direct experiment, abstracts, and evaporates, during the fifth and seventh months of vegetation, about two million pounds of water. An acre of hops as much again. This amount of water which passes off from the plants of a cultivated field during the period of vegetation, may exceed the amount of rain at the time precipitated upon it. Hence we observe that soils having a light and porous structure, admit of the free passage, during the summer months, of the water which had fallen in the previous winter, and been somewhat retained in the deep strata of the soil. We observe, then, that this character of soil is best adapted to furnish the plant with its requisite supply during its growth. Where these physical properties are wanting, the defect may be remedied by proper manipulation of the soil, *i. e.*, by deep culture.

MINERAL PLANT-FOOD.

What are the inorganic or mineral ingredients which are absolutely necessary to all plant-growth? They are potash, lime, magnesia, small quantities of iron, phosphoric acid, sulphuric acid and nitrogenous material—either nitric acid or ammonia. These compose the mineral ingredients of plants. The total absence of any of them prevents the full development of vegetable life. The soil must not only contain them, but they must be present in a form which admits of their easy assimilation by the plant.

Sisal Hemp for Florida.



In 1832, and during several subsequent years, the most earnest and persistent efforts were made by Dr. Henry Perrine to establish an acclimating nursery and plantation in Southern Florida, and to introduce into that semi-tropical region some of the most valuable plants of the tropics, and especially those yielding foliacious fibres of commercial importance. Several of these were actually introduced, and among the rest, Sisal Hemp, (*Agave Sisalana,*) a plant closely related to the Yucas of our gardens and old fields.

The ill health and final demise of Dr. Perrine, who was at the time United States Consul at Yucatan, prevented the carrying out of his plans, and, until recently, little has been heard of a plant which is destined in the future to figure largely among the productions of our young but rapidly growing sister, Florida.

It is a gigantic plant, delighting in rocky and sandy land, and especially such as contains a large proportion of lime. Its appearance can be judged of by our engraving, which is from a correct drawing of the plant as it appears after a cutting of the leaves has been made.

It requires but little cultivation. About a thousand plants are set on the acre. Young plants come up from the long lateral roots. These may be kept at the proper distance from each other, and no replanting will be required. Coarse vegetable manure should be applied from time to time. It requires from three to five years, according to the goodness of the soil, for the plant to reach the stage that will permit the lower leaves to be cut. It will then yield a ton to the acre. The value of the fibre has been demonstrated, a number of tons having been collected and sent to market, where it brought within from a half-cent to a cent per pound, as much as the best Manilla hemp—that is, in the neighborhood of two hundred and fifty dollars per ton.

The leaves, when fit to cut, are from two to six feet in length, and often three inches thick at the butt, and have the general shape of the head of a lance. They contain a gum, which causes the only difficulty which exists in separating the fibre.

Mr. W. C. Dennis, of Key West, Fla., in the Patent Office Report for 1856, makes the following interesting statements:

"The plant evidently requires dry, hot weather, as well as a dry soil; for since I have observed its growth I have never seen it suffer from drouth in the driest and hottest weather and in the most arid spots, provided its roots could find a plenty of the right kind of soil. The meteorological record for the last twenty-five years shows that this plant is well adapted to these keys and the southern extremity of the peninsula, for such winters as the two designated are evidently rare.

"It would seem that there are lands enough in Florida, south of the limit where the frost would injure this plant, to grow it in sufficient quantities for the present and prospective wants of the country, and that, too, in a frontier region which it is of national importance to settle. As far as known, these lands are not well adapted to an extended range of agricultural products, yet I am certain that the tropical Agaves in all their varieties will flourish here in the greatest perfection.

"Mr. Hermonds, of Indian River, Florida, says that Sisal hemp grows well there, and has continued to thrive well for years. He thinks that my last year's estimate of the product per acre is too low for that region. The experiments I have made within the past year in getting out a number of tons of this fibre convince me there are but few difficulties in accomplishing this work cheaply. These experiments prove that if all the vesicles of the leaves are ruptured by crushing or rolling, the pulp and gum are easily washed out either by salt water or fresh. The plan which I found most successful was to roll the leaves, being careful to rupture all the vessels, then confine these crushed leaves in an open-work wooden frame or box, which I placed in such a manner that the tides forced the sea-water through them both at the ebb and flow. In this manner the gum and pulp were so far washed out in from three to six days (according to the temperature of the air and water) that by beating the fibres a little after they were dry they were fit for market.*

"Mr. Hermonds mentioned as a tested fact that steeping the crushed leaves in boiling water, even for a few minutes, at once dissolved the gum and cleaned the fibre. This renders it almost certain that where a steam-engine is used to

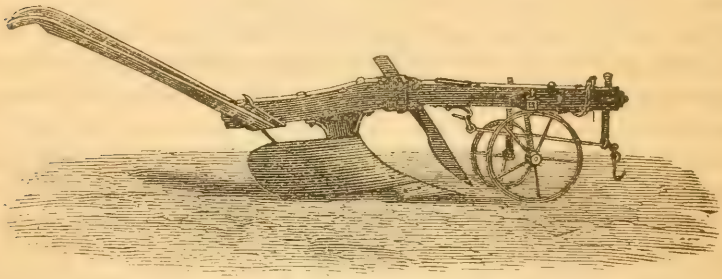
* Would not this method be objectionable on account of the difficulty of drying the fibre or the materials manufactured therefrom?

propel rollers and crush the leaves the waste steam can be rendered effective to clean this hemp by blowing it off between the rollers, aided by a little water in a jet, while the leaves are passing through."

The imports and consumption, in this country, of fibres similar to the Sisal hemp probably reaches $3,000,000 per year.

As Southern Florida becomes more fully settled, we have no doubt the cultivation of this fibre will assume its proper proportions and prominence.

French Agricultural Implements.



England and the United States have, heretofore, been somewhat in advance of France in the matter of improved farm implements, but there is now a decided spirit of emulation awakened in that country, and we may look for results worthy of the "grand nation." The *Journal d'Agriculture Pratique* describes and figures several improved plows and harrows, manufactured by M. M. Garnier et Cie, and among the rest the implement represented in our cut, which seems to us to have its excellent points. It is described as adopted to light work, and is sold for 65 fr. A larger implement, for deep plowing, but on a similar plan, sells for 110 fr.

Rice Culture on River Lands.

[*Concluded from our February Number.*]

As soon as the seed is sown, each field should be deeply ploughed, and trash should be taken off with long rakes as it floats up to the banks. In four to seven days, (sometimes more,) as the weather may be warm or cool, the grain will have germinated, and when this occurs the water should immediately be let off, but gently, so as to prevent any washing of land. And now the treatment is one of which I have not seen any mention. After several days, (the number varying again according to weather,) the shoot will be seen "needling" out of the ground. As soon as the point is just perceptible, a deep flow is put on and so kept until the plant is drawn out, technically "stretched" to a length of several inches, (five to seven,) to ascertain which daily examinations should be made. Then the water is brought down

by means of a small opening in the trunk, "a leak," to such a depth that the surface of the land is barely covered, while the plant may be seen lying on the surface of the water, for it is weak, and would fall but for the support so received.

An average should be struck, so that neither the higher portions of the field be left dry, nor yet the lower portions be too deep. The proper height of water once determined, no increase or decrease should be allowed, for by these the plant seems worried. After several days it will shoot up and grow. I have seen this flow held from thirty to thirty-eight days, generally about thirty-five. The object is to prevent the growth of the great enemy, grass, the rice being also pushed forward. The proper time for drying must be decided by the appearance and condition of the plant, especially the colour, which, by slight change, shows that it begins to tire of water. The practised eye discerns this. If the water were longer kept on there would be cessation of growth and sickening, resulting, perhaps, in permanent injury, or at least requiring time for recovery, whereas really good management consists in keeping up an uninterrupted state of healthy growth. Moreover, regard should be had to allowing a sufficiently long interval of dry growth between this and the harvest flow. Great watchfulness and discretion are required in this treatment. Indeed, I consider it the critical period in the growth of the crop.

This method has very great advantages in the diminished amount of labour requisite, for the crop is hoed, of course, only between this long or stretch flow, and the joint or harvest flow.

Therefore more land can be planted to each labourer. The danger of it is the temptation to cover with water the whole or nearly the whole surface, on account of both grass and birds, whereby portions of the field are injured by being "over-stretched" and "spindled," instead of robust and vigorous. *The more shallow the water, consistently in the main with the objects of its use, the better for the plant.*

I have seen this mode practised on lands of great strength and fertility. I would advise caution in heavy watering on inferior lands. Another method is to allow the plant to put out two, sometimes three, even four leaves, and hoe once or twice before giving it this stretch flow. In this case the period of the flow is much shorter, varying from twelve to fifteen, sometimes eighteen days. I incline to the opinion (not, however, I believe nem. dis.) that where few acres are planted to each labourer, and water can be commanded at any moment, and especially on uneven lands, this last cultivation will produce more to the acre. But so many more acres can be cultivated by the same force of labourers, by the former method, under circumstances which admit it, water doing much of the work of the hoe, that a greater general result is obtained. Indeed, where land is abundant and labour not so, or too expensive, I think it would be more profitable to use it, even if necessary to leave out, to a reasonable extent, high portions of a field so as to water properly the lower. Sometimes it is convenient in the arrangement of work to

have some fields not so long under water, and then two or three of the most uneven may be selected for the latter method.

Open planting or sowing without covering is also a means of saving labour. On some rivers it is extensively, and, I believe, successfully practised. Rice so planted is, however, liable to more accidents than when covered. I have heard of the germ being destroyed by some insect. It should be so planted only during the first half of April, too late for frosts and too early for birds, and the seed should be stirred in a thin paste of stiff clay to prevent its floating up; put to dry, of course, before being sown. Because of the anxieties attending it, I have practised it but little, though that little with success. The surface of the land was, however, so well pulverized, that the seed was for the most part covered by the action of the water.

The proper time for letting off the stretch flow has already been indicated. It should be done very gradually, made to leak away through a very small opening in the trench door, as a rush would throw down some of the plants. In very low spots where the water has been deep, some of them having been over-stretched, may be left lying on the ground. But they, or most of them, will spring up afresh and grow rapidly. As soon as the ground is quite dry, hoeing and picking grass should begin—in doing which the ground should be well stirred. Grass is most effectually destroyed in fair weather, as it withers under the hot sun. When the stretch or long flow has been well managed, two hoeings are often enough, especially on lands not much infested with grass. When hoed just before the harvest, water is to be put on, the hoeing should be shallow and done with great care, for new roots are then put out. About five to six weeks is the period usually allowed for dry growth between the long water and the harvest water. This depends somewhat on seasons, and whether the long flow has been well or ill managed. If the latter, the rice may have received a "back-set" and required time for recovery. Reference must be had also to spring-tides. The *best* time is again usually indicated by the appearance of the plant. The direction given by a very good planter was "as soon as you discover that the stalk of rice is putting out new roots above the old, it is evident that the plant is about forming the second or ear joint, and must *instantly* have the water." But this gentleman's lands were on a river were water could at any moment be commanded. On lands dependent for flowing on spring-tides, if I could not hit exactly what might be thought the best moment, I should anticipate a little, rather than be after it. Therefore, I adopt rather the following instruction of another, who gives his conclusion as the result of actual experiments made at the time of forming the several joints. According to him, the proper time is "as soon as the plant begins to enlarge and assume that plethoric appearance which, to the practised eye of the planter, evinces that nature is making an effort to complete the process of vegetation which is to result in fruit. The stimulus of water then given to the plant seems to infuse new life, the stem or tube in which the ear is formed increases much in size, the colour of the plant becomes of the darkest green," etc. This flow is deeper than the

long flow, as of course the plant is taller. It is kept on, freshened by new supplies, or occasionally changed, until harvest, each field being dried a few days before cutting. The proper time to cut is when the lowest grains on the ear, say for about the space of an inch from bottom, are still unripe; better a little under ripe than at all over ripe. In the anxiety to save all, I have seen cutting delayed until, before it could be completed, much of the crop was over ripe, resulting in a much greater loss, first from the grains dropping, and then from breaking under the pestle. I have now come round to my starting point, yet I fear what I have written is scarcely more than an outline. The operations of a rice plantation include details far too many to be embraced in this paper. In this age of "fertilizers," some may wonder that nothing has been said of them. It is because none are used other than the rich deposit from the river water. Without other aid the land is capable of generous returns. And in these times when nothing, in agriculture at least, can be undertaken that involves more than the ordinary risk pertaining to every calling, two great advantages may be claimed for rice planting—the one, that in quality none from abroad has even approached that produced at home; the other, and this deserves special notice, that the rice crop is the safest of all the large staples; it is liable to fewer accidents, and the plant being a hardy one, not only survives most when they do come, but often does well after them as also after much ill treatment.

J. J. PRINGLE SMITH.

[*Correction.*—In the article in February number, it is said "trenching, sowing and covering can be all done at once by machines," etc. The sentence should read, "trenching and sowing (and probably, with slight addition, covering also) can be," etc., etc.] S.

Value of Science to the Farmer.

AN ADDRESS DELIVERED BEFORE THE ABBEVILLE AGRICULTURAL SOCIETY, BY DANIEL LEE, M. D.

[*Concluded from our last number.*]

Those who would impart fruitfulness to poor land in the cheapest way, must not only utilize solar heat every month in the year, all rain, dew and other atmospheric advantages, but those mild and severe drouths that raise fertilizing salts from the subsoil, and the rocks and earth below to the surface of the ground by capillary attraction. This source of fertility is not sufficiently studied. In some climates, as on the arid and strongly alkaline plains east of the Rocky Mountains, a large excess of bitter salts accumulates. More rain would remove this excess of potash, soda and magnesia, and carry these alkaline salts to the ocean. In our climate so much rain falls as to wash off any soluble salts from the surface of our fields, if not fixed in some living plant. Hence the importance of covering our fields with active vege-

tation at all seasons of the year. Naked old fields not only wash into gullies very easily, but the bare earth is still more impoverished by the removal of all the agricultural salts that rise to the surface of the ground, either by capillary attraction or hydrostatic pressure. A thick turf of grass and clover, with some plants growing in summer like Bermuda and crab-grass, and others growing in the fall, winter and early spring like clover, blue-grass, orchard-grass, herds-grass, oat-grass, rye-grass and Timothy, operates to prevent all washing, and steadily accumulates plant-food for making, in the future, large crops of cotton, corn and wheat, with no outlay in hauling and spreading stable or cowpen manure, and no expense in the purchase of commercial fertilizers. The manure known to be present in such a turf, has been estimated by good farmers as equal to ninety loads of good stable manure spread and plowed in on an acre. As the agricultural salts that spring-water or any other brings to the roots of growing plants costs nothing, and as these plants, especially clover and the nutritious grasses, make valuable farm stock as well as rich vegetable mould, I submit that this is a plain, common sense system of mixed husbandry for obtaining a fair income from land with small capital and labor. Where the land is too poor to produce grass and clover without help, some concentrated commercial manure should be purchased and applied. I recognize fully the great value of true agricultural salts, and I am anxious that you, myself and all other Southern farmers avail ourselves of those climatic advantages clearly within our reach, to command a full supply of the most concentrated manure, and at the least possible expense. In the aggregate, our wants are large, for we have a great deal of land in a fine, healthy climate that is poor in its natural state, and not a little that has been more or less impoverished by man.

In studying this subject, I have observed with lively interest the remarkable and enduring fruitfulness of river and creek bottoms, and especially the deltas of all large streams like the Nile, where high winds and tides mingle occasionally compound sea-salts with fluviatile deposits. The sea being the grand reservoir of the earth's most fertilizing salts, and its water cheaply evaporated, as at Turk's Island and the salt lakes in Southern Florida, and possibly in some places on your own coasts, I feel confident that this source of supply, properly developed, will be worth indefinite millions to Southern agriculture. I know from personal observation that lime and its salts make rich land in Tennessee, Kentucky, Ohio and Western New York. These calcareous rocks, like South Carolina shell-marl, are all formed in the ocean. Sea-water abounds not only in land plaster and other salts of lime, but in salts of magnesia and soda, with more than traces of potash. It has not enough phosphoric acid, but the fossil bones or coprolities of the Charleston basin will, fortunately, remedy this defect.

The value of lime as a fertilizer (with other salts) is shown by the facility with which the nitrate of lime is formed in all limestone caves in Northern Alabama, Tennessee, Kentucky and Western Virginia, from which large quantities of saltpetre were made for gunpowder during the late struggle for

Southern independence. Knowing that saltpetre has the same force to make wheat, corn and cotton grow to feed and clothe mankind that it has to drive lead and iron balls through the air to kill the human race, I bought a farm on the Tennessee River on which they were then making saltpetre from a lime salt. (Nitrate of lime.)

Time will not permit me to go into the matter of *nitrification* as a fertilizing process, whether in a lime cave, in the soil, or elsewhere. The essential facts are these: When nitrogen is liberated from any vegetable or animal substance, if no lime or other alkaline element be present, it combines chemically with hydrogen to form *ammonia*, which is a well known alkali. But if lime, potash or soda be present, nitrogen forms no ammonia or other alkaline substance, but unites with oxygen to form a strong acid, (*aquafortis* or nitric acid.) This at once combines with lime, as found in our saltpetre caves.

Lime also enriches calcareous soils by promoting the formation of both phosphoric and sulphuric acids out of their respective elements. Iron ores and iron in soils, often have sulphur or phosphorus combined with the metal, in which condition they are worthless as plant-food. If broken fine and heated with lime, the metal yields sulphur or phosphorus to oxygen, and the sulphate or phosphate of lime results. Lime lands in Tennessee and Kentucky are excellent for wheat, blue-grass and clover, for the reason stated, and among others because lime developes in the soil assimilable nitrogen as well as phosphorus and sulphur—the three most expensive elements of all crops.

A word or two in explanation, how larger hickory, walnut and poplar trees grow on limestone hills, mountains and plains than elsewhere. The ashes of these trees abound in *potash* and contain some *magnesia*. How does *clay*, that is no richer in potash on calcareous land than elsewhere, give to forest trees two or three times more of this valuable alkali than they obtain from similar clay with nearly all lime left out of it? When the chemist will extract potash from its insoluble silicate in clay, felspar or mica, the mineral is made very fine and heated with quick-lime. This combines with the flint acid and liberates potash, so that a weak acid or water dissolves it. Hence, in England, roasting clay and turf with lime, or without it on calcareous soils, gives available potash for wheat and other crops. Marling, paring sods and burning them for manureal purposes, are practices as old as enlightened Roman agriculture. Having before us all the lights of geology, chemistry, vegetable and animal physiology, climatology, and two thousand years' experience in tillage and husbandry more than the Romans had, surely our practice of agriculture should be far better than theirs. If we will only act in concert, we can soon double and quadruple the value of our landed property, by making every acre far more productive. In union there is strength and wisdom. Isolation begets extreme weakness, conflict of action in all purchases and sales, poverty of land and dissatisfaction in the community. By combining their limited means, a thousand farmers may obtain from the ocean fertilizers at less than half, and probably less than a fourth of the sum they will cost in any other way. The richest earthy salts on all continents and islands naturally

flow into the sea. The supply is obviously inexhaustible there, while the great Atlantic is close at hand.

Suppose a farmer raises forty bushels of wheat on an acre and exports the grain, but returns the straw to the field, how much mineral matter purchased in a seaport will compensate for what the soil loses in the crop?

Only fifty pounds of the best agricultural salts are needed. Should these cost four cents a pound, two dollars will balance the account with the acre yielding so large an amount of wheat. A crop of eighty bushels of corn sold off the farm would be compensated by the same quantity of fertilizing salts. This results from the fact that when 100 pounds or grains of corn are burnt no more ashes result than from fifty pounds or grains of wheat.

The most fertile wheat and corn lands on this continent, aside from river bottoms, are found overlying salt-bearing rocks. The sweetest and most nutritious grasses for all kinds of farm-stock grow on land not far from the sea, and occasionally watered by its surf or spray, or on soils equally saline from salt springs, marshes or salt-bearing rocks in the interior. Such springs may be seen in New York, Canada, Pennsylvania, West Virginia, Ohio, Missouri and many other States. In view of these facts, and the poverty of many fields, why can we not take one step in advance, and supply our farms and farm-stock from the ocean, with those salts of the earth, without which it is barren, and cattle, hogs, sheep and horses are unhealthy? Our Saviour called his Apostles "*the salt of the earth*," and mention is made of "salt that is not fit for the dung-heap."

Common salt, (that is, pure chloride and sodium,) is a poor fertilizer as compared with the very compound salts which are commended to your favorable regards.

In pure common salt there is no lime, no magnesia and no sulphuric acid. But in sea salts there are the sulphates of lime, (land plaster,) sulphate of magnesia, (Epsom salts,) and sulphate of soda, (glauber salts.) There is some potash, and some phosphoric acid. In a word, sea-water yields an universal fertilizer, like the best stable manure. Sea salts being soluble in water, give to growing crops food when it is most needed. They can be sown broadcast by hand or by a machine; or they may be sown in drills with any seed.

Decorticated cotton-seed cake furnishes an exceedingly valuable manure; and as muscle-forming elements (albuminous matters) to give strength to working stock, 100 pounds of this cake are equal to 400 pounds of corn.

There is more money in cotton seed than is generally known and it is bad economy to waste its oil by rotting the seed. Indeed, a farmer might as well rot sound corn for manure, without feeding it, as cotton seed. Properly fed, 100 pounds of cotton-seed cake will make more pork or beef than 200 pounds of corn meal. The hard covering on cotton seed should be ground off by a hulling-machine before the seed is cooked for stock, if not pressed to extract the oil. If cotton-seed cake were nearly valueless, we should not see English farmers buying it from one decade to another at a high price.

Dr. Voelcker found thirteen and a half per cent. of magnesia, and about forty per cent. of phosphoric acid, in the ash of cotton-seed cake.

Cultivation of the Pineapple at Key West.

The Pineapple, (Bromelia Ananas.)

Mr. Editor: As you desire some information in regard to the cultivation of the pineapple, I will give you, in brief, my plan, which is very simple:

The pineapple grows from the slips or branches. The butt-ends of these are cut off, and the lower leaves removed. A hole is then made with a stick (dibble) in the prepared ground, and the slip inserted from two to six inches, according to the size. The plants should not be less than two feet apart each way, as the leaves spread very much. In eighteen months from the time they take root, the fruit will be fit to cut. As soon as the apple is cut, I break off all the slips for planting. From two to five suckers will spring up from the old stump. Only two must be allowed to grow. Last season I

took my pines to New Orleans. This season I am thinking of trying the Charleston market. B. BAKER.

Key West, Fla.

[With a very slight protection, in winter, the pineapple could be fruited in the open air in the latitude of Charleston. In the Azores, it is raised in pots, which are set in the open air in summer, and in winter are protected from the cold by a mere shed or lean-to with a glazed roof.

The varieties of the pineapple are numerous; but the most prized are the Antigua, Queen, Black Jamacia and Moscow. The largest fruited are the Enville and the Trinidad.—ED.]

More About the Evergreen Grass.

Some months ago, I wrote you an article in which I gave the benefit of my experience and observation in the adaptation of "The Tame Grasses" to the soil of the Carolinas.

I wrote then with the view of encouraging the sowing of grasses, while it was yet time to do so, and I would have made another effort to arouse our people to the importance of the subject but was prevented, and now the time for spring sowing is at hand, and if you will give me the use of your pages, I will endeavor to show that evergreen grass suits our people best, and is particularly adapted to our section.

In the article alluded to, I was able to give evidences of the experience of many of our best farmers who have successfully grown clover and orchard-grass, while evergreen grass, which was in my judgment best suited to our section of any tame grass in use, was so little known here that, notwithstanding it had recommended itself to that section in Virginia east of the Blue Ridge, which in soil and climate so nearly resembles our own, I hesitated to do more than call attention to it.

Since then I have seen it growing luxuriantly in this State, and I am so well assured of the benefits which will flow from its extended introduction, in affording summer and winter pasturage and upland hay, in fields now covered with broom-sedge, that I feel constrained to give its main features condensed as much as possible.

I have long since discovered that so long as cotton commands twenty cents per pound, the cotton planter will turn a deaf ear to that man, be he Virginian or Kentuckian, who will attempt to prove that a rich lot, well set in clover, will, besides improving the lot, yield remunerative returns. Hence, I say the grass known in Virginia as evergreen, best suits the planters of the Carolinas. Its features are briefly told. First, let me remark that there is no grass more easily removed from a field by the use of a two-horse plow.

It will grow on any land which will produce good oats. It continues green and growing nearly the whole winter in Virginia, hence its name, while in a warmer climate it will, I think, be a good pasture through the entire winter.

It makes a strong tussock, thus holding the soil and resisting the effect of washing rains upon the soil. The sod when turned under greatly enriches the land. In good soil it will grow five feet high, but in our exhausted lands it will scarcely grow higher than oats. It unquestionably has greater tenacity of life during our severe drouths than any tame grass known, and though apparently seared and scorched by the rays of the sun, yet in the fall of the year, it reässumes its green habiliments with which to supply food for stock in winter. If a field of it is kept for hay, two crops is the yield per annum. The hay, while not equal to Timothy, is but little inferior to it.

It should be sown on oat land well prepared by the plow and harrow, the seed to be sown at the rate of one bushel per acre on top of the soil and slightly brushed in. The field thus sowed should not be used as a pasture until the following year.

The advantages flowing from the use of evergreen grass are these: By sowing the lands in this grass, cattle and hogs can be supplied, without going to the corn-crib, with provender of which they are exceedingly fond. Stock will be fat the year round. When the mules are unemployed, this grass will support them handsomely, and not salivate them as does clover. Land now washing away and soon to be thrown out, will be reclaimed and rendered a source of great profit. If these reasons are not sufficiently cogent, I must confess my inability to say anything, even if I possessed better powers of composition, showing why I urge the universal use of evergreen grass in the States of North and South Carolina. VALLEY VIRGINIAN.

A Method of Planting and Cultivating Cotton.

PREPARING, MANURING AND PLANTING.

First. Run a centre furrow with a straight-shovel plow, say about the last of February, after which knock down the old cotton stalks. Barn-yard manure, cotton seed or compost, must now be put in the furrow, and covered immediately with small shovels, running so as to break the edges of the centre furrow.

Second. Just before time to commence planting, apply guano on the ridge, allowing it to scatter in the furrows formed by the narrow shovels, and follow immediately after with wide turning-plows, being particularly careful to leave the ridges, upon which the old stalks or stubbles are standing, uniformly wide enough for a six-inch to break out clearly. By pursuing this plan, the uniform width of the rows will be preserved.

Third. When ready to plant, open the bed with a drill, (slick-jack,) and apply from two to three bushels of seed, well rubbed in land plaster, to the acre, and cover with a block or board, one row at a time.

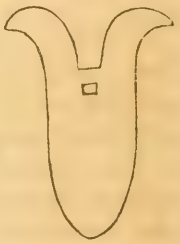
Fourth. When fully convinced, from the breaking of the ground, that a full stand is coming up, and not before, the old ridges must be broken out with straight shovels. By adhering to this rule, two advantages are attained: First,

in the event of missing a stand from the first planting, the land is in proper condition to make the beds anew by running in the same furrows as at first with the turn-plows, thereby preserving the rows intact for a second planting, (never patch;) and the second is, in the event of getting a good stand the breaking of the ridges then will be the first step towards the cultivation, which commences thus:

CULTIVATION.

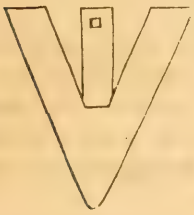
No. 1.

May 1st. 1st. Run around the cotton very close with two bull-tongue furrows, and as soon as the crop is plowed over thus, commence with the hoe hands to chop out, leaving from two to four plants standing in each bunch.



No. 2.

May 15th. 2d. Let the cotton-shovels follow immediately after the hoes, opening the bull-tongue furrows still wider, and gently dirting the cotton at the same time. Besides destroying the young grass, a second advantage of the two first plowings is to allow the sun to penetrate as near the roots of the plants as possible, which almost invariably secures an early growth.



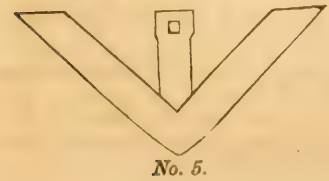
No. 3.

June 1st. 3d. The fifteen-inch sweeps will follow the cotton-shovels immediately, the hoe hands following after them as soon as the rows are finished by the plows, and thin to a stand, say from one to two stalks, according to the variety of cotton. This plowing with the sweeps will hip the ridges as well as the cotton-beds, and leave both with sharp points, resembling house roofs, entirely clearing the crop of every vestige of grass, the thinners taking out weeds, pops, etc., that may be standing in the cotton. This being about the middle of June, and the thinning being finished, the hoe hands may be turned to laying by corn, etc.

June 15th. 4th. For the fourth plowing use turn-plows, either seven-inch twisters or bull-tongue cutters, running two furrows to the row, and allowing a small ridge to remain. The land having been thoroughly pulverized by previous workings, a brisk walking mule will easily throw dirt to the cotton, and, forming a large, flat bed, cover the entire crop of young grass.

No. 4.

July 1st. 5th. The fifth plowing is done with twenty-inch sweeps, three furrows to the row, the wings in the two first furrows running up near the cotton, and slightly sweeping off the young grass, the third furrow taking out the middles, and leaving the ground almost perfectly level.



No. 5.

July 15th. 6th. The sixth and last plowing is done with a finishing sweep, twenty-six inches wide, made in the shape of a crescent, and constructed so as to run flat, merely loosening up the earth, but not turning it. One furrow to the row is sufficient.

No. 6.

The hoe hands having finished laying by corn now, and having no other field work to do, a slight bed may be dressed up after the sixth plowing, in order to steady the heavily fruited stalks, and protect them against winds that are common at this season of the year and later.

SUMMING UP.

It will be seen that this system necessitates two separate operations on the same farm, the cotton-plows working exclusively in the cotton, and by another system, the corn-plows are cultivating the corn, a copy of which, from my farm journal, I will send if desired.

An experience of several years in pursuing the usual method of cultivating cotton, convinced me that much unnecessary work was done, especially with the hoes, consequently, I inaugurated this system of plow-culture about fifteen years ago, and have followed it successfully ever since.

The main point in view was to make every lick count, and in order to do that, some of the utensils had to be devised.

The work is done with six plowings, say one in every two weeks, and only one hoeing, (chopping out,) besides the thinning, which should be done by hand. Each plowing is done with a different plow, a cut of which I will send you, numbered 1, 2, 3, and so on, as they come in their regular order of workings. The first plow leaves the land in proper condition for the second; the second for the third, and so on to the end of the workings.

The first experiment made with this system was with one hand, planting twenty-five acres in cotton. The crop yielded fifteen bales from the screw. The second was with five hands, running two plows in cotton and planting sixty acres, making forty-three bales from the screw. The first, however, had the chopping out and thinning done extra.

With a full force, six bales to the hand and a surplus of provisions was made with perfect ease up to the commencement of the war, the production being limited by the capacity of the hands to gather.

In order to carry out this system successfully, it is indispensably necessary to prepare the land with that view, and also to have the plows properly made and stocked, and then no other than first-rate plowmen to use them. I mention these facts so that no one may be mislead. W. A. JAMES.

Bishopville, S. C., January 31st, 1870.

NOTE.—Plow No. 1 is 4 inches wide, with rounding surface; No. 2 is 7 inches, rounding surface also; the wings of No. 2 are not intended to throw dirt, but to pulverize it by running under; they project slightly forward; No. 3 is 15 inches from point to point of wings; No. 4 is 7 inches wide; No. 5 is 20 inches wide from point to point of wings; No. 6 is 26 inches from point to point of wings, and curved to fit the row.

The Premium Cotton Field.

Mr. Editor: In obedience to a resolution of the Executive Committee of the State Agricultural and Mechanical Society, I herewith send you, for publication in The Rural Carolinian, the report and affidavit of Mr. J. M. Crawford, of Columbia, who was the successful competitor for the premium at our late Fair, for the greatest production of cotton, on both one and five acres.

Hoping that this report may stimulate others to go and do *better* the present year, I am, sir, yours truly,

D. WYATT AIKEN,
Secretary S. C. A. & M. S.

REPORT.

To the Honorable Executive Committee of the State Agricultural and Mechanical Society.

Gentlemen: As I am a competitor for the prize to be awarded for the best five acres of cotton, I do herein certify that my five acres of land is an upland basin, surrounded by a gradually rising slope; that it was wet and comparatively unproductive when I bought it, and that I have by underground draining, manuring, and careful and judicious management brought it to a very high state of fertility and productiveness.

In making my drains I cut a ditch two feet wide by three and a half deep, and filled twelve inches with brickbats or stones, and threw in straw and cornstalks to keep the earth from falling in amongst them; I then filled up with earth. These drains I prefer to tiles, having tried both.

In November, 1868, after gathering my corn I broke up the ground with a half-shovel plow, six inches deep, and followed this with a two-horse plow, being a bull-tongue, fifteen inches long, widened near the point, the better to pulverize the soil. The lot remained in this condition until January, when it was harrowed with a large, two-horse iron-toothed harrow, which completely pulverized the soil, and left the ground clean and level.

On the first of April, I plowed and harrowed again, then laid off the rows four feet, and put the fertilizer in the drill, using a mixture of Peruvian Guano 200 pounds, plaster 300 pounds, and leached ashes 500 pounds, per acre.

I then threw up beds eight inches, and boarded off to four inches, and commenced planting on the 27th April, using the Boyd's prolific seed, procured from Mr. Beckham, of Richland District, S. C. The seed were planted three feet apart by a compass in the hill, and covered with the hoe, the plowing to be done only one way.

The cotton came up well, and as soon as up, I sided closely, then hoed, then threw back the soil with a plow, and thinned out to one stalk in the hill. I next ran a half sweep close to the cotton, two furrows to the row, afterwards ran one furrow to the row with a sweep, breaking out the middles, and fol-

lowed with the hoes to kill the grass. In August, another hoeing was given to "lay by" the crop, cotton then lapping in the rows. The thorough preparation of the land before planting prevented the necessity of much labor in cultivating the crop.

From these five (5) acres were picked and weighed 12,510 pounds. The manure cost as follows: Guano $44; plaster $14; ashes $4; stable manure $20; total $82.

In competing for the prize on the best one acre of cotton, I certify that the land is the same as the five acres, and cultivated the same way, the only difference being in the kind of manure used, and time of putting it on.

Eighty cart loads of stable manure, at a cost of twenty-five cents per load, were broadcasted and plowed under in March. The land was thrown up in beds four feet apart, and the Boyd prolific seed planted in hills three feet apart, covered and cultivated as were the five acres. This single acre yielded a much larger crop than the average of the five acres, the harvest being 3,960 pounds of cotton, with a cost of $20 for manures.

Your obedient servant,

(Signed,) J. M. CRAWFORD.

South Carolina, Richland County.

Personally appeared before me, J. M. Crawford and L. R. McCormick, who made oath that the above statement is correct.

(Signed,) J. M. CRAWFORD,
L. R. McCORMICK.

Sworn before me, this 10th day December, 1869.

(Signed,) EDWARD HOPE, *Magistrate ex officio.*

Castor Bean and Bene Seed.

Editor Rural Carolinian: Having received many inquiries as to the methods of cultivation and value of the Castor Bean (*Palma Christi*) and Bene, (*Sesamum indicum,*) and noticed your own call for an article on the cultivation of the former, I hand you the following, which I have condensed from several papers published by United States Department of Agriculture, from Porcher's *Resources of Southern Fields and Forests* and from a pamphlet by the St. Louis Oil Company.

Castor oil, besides possessing valuable and well-known medicinal properties, is called the *very best lubricator known*, is very largely used in the manufacture of patent hair tonics and perfumed essences, and, with pure spermaceti, exceeds even olive and palm oils in value as a soap stock. Bene oil possesses medicinal properties similar to those of castor oil, but milder; it has the nutty flavor of the finest virgin olive oil, and the very valuable property of not readily becoming rancid, and as a lubricator and soap stock, it fully equals the olive oil. What is sold as the best olive oil in this country

now, is almost entirely cotton-seed oil, flavored with Bene oil—the cheaper grades being simply refined cotton-seed oil.

Castor Beans and Bene Seed are usually sold in New York at about six cents per pound; the former brought from Indiana and Missouri, the latter from the coast of Africa. They each yield about one-fourth of their weight in fine oil, worth about $2 00 per gallon. The Castor Bean weighs forty-five pounds to the bushel, and an acre, well cultivated, will yield fully sixty bushels.* The falling leaves of the Castor Bean are an excellent fertilizer, and benefit the land nearly as much as a crop of clover turned under. The plant is also said to be so offensive to the caterpillar, that cotton, in its vicinity, is never visited by this pest, and it has been often said that planting the Castor Bean in the fence corners, and a few rows of it interspersed with the cotton, will prevent their visits. The use, as manure, of the oil-cake meal, which is an excellent fertilizer, might, perhaps, have the same effect, if applied near the roots of the cotton just before the caterpillar is expected. Neither the Castor plant nor the Bene are troubled by stock of any kind, and they may, therefore, be planted on land not under fence.

The cultivation and gathering of these crops is extremely simple and inexpensive. The land is prepared in the same manner and at same time as for cotton, and should be manured in same way if very large yield is expected. The Castor Bean is planted in hills six feet apart each way. But one plant should be left to each hill, though several seed should be planted to secure a good stand, as the cut-worm sometimes destroys the young plants. The seed are sometimes soaked in warm water before being planted, as otherwise they germinate slowly. They grow rapidly when once started, and soon shade the ground so as to require no more working, but should, of course, be kept clean until they can thus take care of themselves. Between every sixth and seventh row a space of eight feet should be left for passage of a cart when gathering the crop. About the first of August the top spikes begin to turn brown and the harvesting commences. About once a week a cart is driven through the field, and the brown spikes are cut and thrown in, and carried to a drying yard, which is simply a clear space of hard and clean ground prepared for the purpose, on which the spikes are spread out to the action of the sun and air, which in a very few days cause the beans to pop out of their pods. The spikes are then raked off and the beans are swept up, winnowed if any dirt is swept up with them, and put in bags for market. In bad weather the spikes are heaped in small piles and covered with straw or tarpaulins until all danger of rain is past. Beans gathered after frost, or which have been wet, should not be sacked with the best beans, but sold separately.

Children can perform the whole labor of gathering the crop, and preparing it for market. On large plantations drying rooms are constructed warmed by stoves, where the beans are popped out regardless of the weather, the rooms being used as store-rooms, except during the bean harvest. When the pods

* See monthly report of Department of Agriculture, March and April, 1869, page 131.

pop open the beans projected several feet, so in a drying yard the clean space should extend about ten feet on every side of the pile of spikes. When the drying room is used and once under way, the refuse spikes serve to keep up the fire.

The Bene is an equally hardy and easily grown crop, and its cultivation is very similar to that of the Castor Bean. Rows five feet apart and plants three feet in a row. As few seed as possible are used, to save trouble in thinning out, and they are planted by lightly pressing them in the soil with the fingers. The pods ripen in succession, the lower ones first, and as fast as they show signs of opening, the limbs bearing them, or sometimes the whole plant is cut, tied in bundles by the middle, and carried to the yard where they are stacked, butts down, or leaned nearly upright against poles laid in crotches. The pods soon open at their tops, and the small round seed are collected free from dirt or husks by simply inverting the bundles over sheets spread to receive the seed, and giving them a slight shake. This is repeated as the pods open successively, and the seed are sacked for market. The Columbia Oil Company has procured a supply both of Castor Beans and Bene Seed for planting, and can supply those who wish to undertake their cultivation. A.

Frogs.—The *Echo de Luxembourg* says: "The exportation of frogs to France has for some time back increased considerably. A certain dealer of Vance has, within the last three weeks, dispatched 200,000, and three days back he sent off 30,000. They are principally directed to Rheims, Nancy and Paris, a thousand of them costing 13f. Their entrance into Paris is free. The principal places from which they come are Vance, Fouches, the borders of Semois, and part of the province between Arion and Houtfalize. At Rheims twenty-five pairs of legs, the only part eaten, sell for 60c. Nevertheless, the frogs are exported entire."

[I suggest this as a new branch of industry in the South. *There is no end to the production.* Nature does everything, except gathering. J. W.]

Hints on Manuring Land.—If a few hundred weights of concentrated fertilizing matter is applied to land, and the crop produced by this stimulation is sold, as nothing is returned and the substance put on is all absorbed by the crop, the land is not benefited, but if twenty hundred pounds of any kind of artificial manure per acre be used on a piece of poor land, which will force twenty tons of turnips per acre, and this twenty tons of roots are eaten on the land by sheep, there are twenty tons of dung and urine in the soil in the place of the twenty hundred pounds first put on. This will explain how the turnip crops improve the poor soils of England, and will show that the same improvement might be made in America by using the fall months for the purpose. However, as some Americans believe that grass should lie and rot on the ground in preference to being eaten and returned to the soil as dung and urine, and that clover is best plowed under, they will not be likely to see that any weight of roots per acre can benefit the soil by being manufactured into manure as stated.

Department of Horticulture and Rural Art.

Something About the Walter Grape.

Among the comparatively new and scarce grapes of the present day, few have attracted so much attention as the Walter. So great have been the claims made in its behalf, that many have on that account set it down as among the "Humbugs in Horticulture," of which we have had so many of late. Whether it will show itself really the first-class grape for general cultivation that it is hoped it will prove, we cannot now determine. It has not had time yet to prove its adaptation to all soils and climates; but that it is a grape of great promise, we may set it down as certain. It has proved valuable in many parts of the Northern States, and has been fruited with success in some portions of the South.

The Walter is a seedling of the Delaware crossed with the Diana, equalling the Concord in growth. Wood, short-jointed, dark brown, approaching black, extremely hard, and ripens early. Leaves large as Concord, strong, rough beneath, and shaped like the Delaware, no wool, green on both sides. Berry about the size of Catawba, cluster not quite so large, but weighing very heavily from compactness. Like the Delaware, sets too much fruit, and must be thinned. It ripens with the Hartford Prolific, and is, therefore, a very early grape. It continues to grow sweeter by hanging on the vine until it is entirely raisined, which it uniformly does, either in the house or on the vine; although the season is too short for them to raisin on the vine at the North every year. Its propagators say: "There is no grape in all the list which will carry, on the wood or packed in boxes, like it. We think that thirty pounds packed in bulk will carry from the Lakes to New York market, in better order than five pound boxes of other varieties, Diana excepted."

When defoliated, the "Walter" resembles an overgrown "Delaware" or "Concord;" has dark brown, short-jointed wood, very hard, and ripens to the extremities. It never decays. It is juicy, thin-skinned, and in texture of flesh like the Catawba, containing not a particle of acridness, but is extremely sweet throughout flesh and skin.

Neither the "Walter," nor any other strong growing variety, should be pruned on the one-eye system, as this gives short clusters, and often none at all, but should be cut to three eyes, not counting the base buds, on the new wood from the horizontal vine, fruiting the two upper buds and allowing an under one to grow a fruitless cane for the following year.

We have seen the Walter in bearing, and can attest to its thriftiness, its abundant fruitage and the beauty of the fruit; and having received some fine vines from the propagators, Messrs. Ferris & Caywod, Poughkeepsie, N. Y., we hope to be able to make a favorable report of their conduct in our trying climate. We have, also, sent vines into the interior to be tested there, and shall, no doubt, get a good account of them in due time.

The Walter Grape.

Experiments in Hybridizing the Grape.

[To Dr. A. P. Wylie, of Chester, South Carolina, belongs the credit of being the most scientific, careful and successful experimenter in hybridizing the grape that this or any other country has produced. An interesting sketch of his experiments is before us in the form of a letter to Mr. F. R. Elliott, Secretary of the American Pomological Society, some extracts from which we herewith lay before our readers, regretting that we have not room for the whole.—Ed.]

THE PROCESS OF HYBRIDIZING.

"My mode of hybridizing differs but little from others practicing this art. I select a good, healthy bunch; watch when the first blooms commence bursting; then go, early in the morning, when damp with dew, and clip off all blooms already blown or about bursting, and all immature blooms, saving only those which would probably burst their petals, or expand within twenty-four hours. Then, with a very small cutting instrument, or, what answers better, a couching needle, detach the stamens containing the unripe pollen; then cover with paper, and shade, to keep the stigma in a damp condition; on the two following mornings, I apply the pollen, using a velvet pencil, as preferable. By this means, I avoid the possibility of self-impregnation. After the fruit ripens containing the impregnated seed, I wash and preserve them in powdered brick-dust or sand, in phial, corked loosely, buried in the ground until spring, then plant them; and, when a few inches high, if I wish to push them, inarch them on the young shoots of strong vines cut off for the purpose. By this means they will bear the following year."

IMPROVING THE SCUPPERNONG.

"My experience goes far to establish the following facts, viz: First, that we cannot fertilize the Scuppernong with pollen from any other native species or their hybrid varieties, as I have repeatedly failed to do so under the most favorable circumstances; also failed, after numerous trials, to fertilize Scuppernong with male (staminate) hybrid Scuppernong. Second, that we can impregnate the foreign (*Vitis vinifera*) with pollen from the Scuppernong, as I have had the plants growing ever since 1861; but none have borne fruit. Third, that we cannot impregnate either Labrusca, Æstivalis or Cordifolia, as I have repeatedly failed in the attempt. Fourth, that you can fertilize both native and foreign, and their hybrids, with male (staminate) hybrid Scuppernong pollen, as I have often done. Fifth, that no first crop of Scuppernong and foreign will produce a prolific fruit-bearing plant; as those have invariably either proven to be male (staminate) or hermaphrodites with (stigma and stamina) male and female organs of reproduction defective, consequently bearing no fruit. It is true, I have seen one of those hermaphrodites bear a few berries, by applying pollen from a grape vine of a different variety. (See *Gardeners' Monthly*, 1868, page 153.) Sixth, that you can produce a prolific hybrid Scuppernong by impregnating the foreign (*Vitis vinifera*) with pollen from hybrid male (staminate) Scuppernong, as I have had a hybrid thus produced to bear *perfect* fruit, with perfect seed, for the first time, this last summer."

RESULTS.

"I have been hybridizing extensively for ten years; but, owing to the war, the passing and repassing and camping of armies, the bankrupt and

unsettled condition of the South, only a few of the many promising varieties I have originated have been well tested, even in one or two localities. Some of these are of a very good quality, hardy and prolific bearers. Many more, the fruit of which I think far ahead of any native in cultivation, and equal to some of the best foreign, have fine native foliage, (in appearance,) and every promise of proving hardy, healthy and productive; but they have not at all been sufficiently tested to predict, with any certainty, their future merits. I don't think there is question but that we can easily produce fine, hardy and productive varieties by crossing natives with natives; and occasionally I think we can produce superior kinds by crossing hybrids of the various kinds with each other. Some of my most promising have been produced in that way. I have also great hope from hybrids of the Cordifolia, Ripari, etc. My hybrids from Cordifolia and foreign are mostly of recent origination; but I have many coming into bearing. As our State is becoming more settled, and recovering from the effects of the war, I hope, before long, to have many varieties properly tested, not only there, but in every part of our widely extended country.

"Enclosed are some notes of my grapes sent to Mr. Ravenel, and examined by him and Dr. L. E. Berckmans, of Augusta, in 1867. Those varieties have continued to flourish and bear well, and nearly all of them bore remarkable crops both last and this year. The Delaware and Halifax hybrids, cultivated by Mr. Guthrie, of York, S. C., have not failed in the slightest degree to bear a full crop since they first came into bearing in 1866 and 1867; grow vigorously, and retain their leaves under our burning Southern sun; also the Halifax and Black Hamburg hybrids have done well."

The Martha Grape.

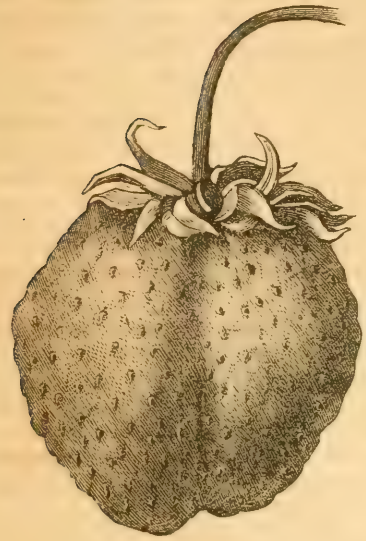
Mr. Geo. W. Campbell, of Delaware, Ohio, furnishes the *Prairie Farmer* with the following description of this comparatively new grape:

"A seedling from the Concord, originated some ten years since by Samuel Miller, Esq., formerly of Lebanon, Pa. In health, hardiness, vigor of growth and luxuriance of foliage, it is fully equal to the Concord, and much resembles it. The principal points of difference are foliage of a lighter shade of green and wood a darker brown. In color the Martha is a delicate greenish yellow, amber-tinted next the sun, covered with a thin white bloom. Skin thin, but tenacious, and does not crack in wet weather. Seeds few and very small. In quality of the Concord type, but much more delicate, sweet and rich, with a pleasant vinous sub-acid, and no coarseness or acridity next the seeds. Pulp slight and tender. Bunches medium; berries medium to large. On young vines, berries and bunches are small, but increase as the vines acquire age and strength.

"The Martha must be regarded as the most valuable white variety yet introduced for general cultivation, for it has apparently all the adaptability of its parent to all soils and situations suited to grape-growing; and as it is of much finer quality and ripens some ten days earlier, is deserving of even a higher position among white grapes than the Concord occupies among black ones. It has also been tested the past season, and found to make delicate white wine of extraordinary richness and body, the must indicating 92°.

"It has never yet shown any indications of mildew or rot; and the berries hang firmly to the bunch, never dropping even when over ripe."

Another New French Strawberry.



Perfection.

Another of De Nicaise's new varieties, lately sent out by Messrs. Vilmorin, Andrieux & Co., of Paris, is thus described:

PERFECTION.—Fruit large, conical, and pretty regularly formed; seeds prominent and regularly disposed, of a lively, reddish color, contrasting with that of the skin, which is of a dark red, merging into a deeper tint; flesh dark red, juicy, sweet, and fine flavored. The aroma somewhat resembles that of Brune de Gilbert. The plant is a strong grower and hardy, resembling Marguerite (Lebreton) in the disposition of the foliage and in the form of the fruit. It is very prolific, and appears to be exceptional in quality.

Oranges for Cool Climates.

There are existing in foreign countries, the *Horticulturist* says, thousands of useful plants, waiting only for the hands of some enterprising naturalist to gather and transplant them into a congenial home in this country, and yet it is not done.

We give now a chance for any one to distinguish himself by introducing into this country one or more new varieties of oranges of a more hardy nature than any now known to America, and making experiments for acclimatization.

In the province of Durango and Chihuahua, Mexico, latitude 28°, there grows an orange tree on the elevated table-lands, the pulp of whose fruit is described by Siemann, as being "exceedingly full, rich and savory, the only species indigenous to America."

The climate of the table-lands of these regions is the same as that which characterizes all the elevated plains of Mexico—dry, and not subject to extremes of heat and cold.

Toward the end of February the night frosts cease; spring commences, poplars and willows begin to grow green, peaches and apricots put forth their

blossoms, but the temperature alone, though fast increasing during April and May, is not sufficient to awaken nature altogether. The fields remain dry until—toward the latter part of May, or beginning of June—the vivifying rains set in; in a few days every herb, every shrub and tree has started into life, and the vegetation developes itself with great rapidity; the season answering to the North European spring has commenced. Early in September the rains cease; in October the night frosts (which last until February) recommence; besides this there are few indications of winter; snow seldom falls, and never remains long on the ground. The great aridity of the climate is best illustrated by the fact that though the rainy season only terminates early in September, there is very little water to be met with in any part of the plains during the winter months. The periodical streams seem to disappear at the moment the rains themselves cease, and the perpetual springs, streams and small rivers are so few in number that the traveller has very often to search for hours ere he is able to meet with water. In such a climate as this grows this orange tree. The City of Durango, situated six thousand feet above the ocean, is described as filled with courtyards and planted with these orange and pomegranate trees.

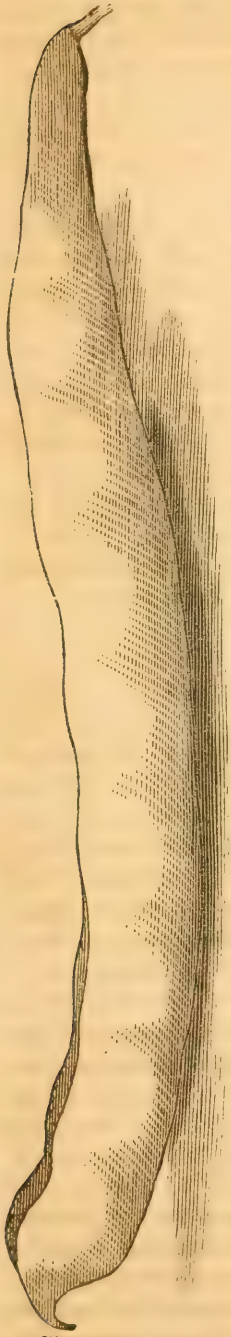
Is it not reasonable to suppose, from the similarity of seasons and partial similarity of climate to certain portions of our Middle or Western States, the seeds or plants from those orange trees can be brought to this country and stand every reasonable probability of a successful acclimatization. Who will do it?

Robert Wight also tells us, in his *India Botany*, that far off in Asia, in the country of the Circars, "there is a red, loose-skinned orange, which arrives at so great a perfection in those Alpine tracts, that it has been called the *hill orange*. This, to my taste, when in perfection, is by far the most delicious of of the whole tribe; but judging from the nature of the climate in which it is said to arrive at its greatest perfection, (a cold, very humid atmosphere,) it seems next to impossible to rear it successfully on the plains. It must be recollected that to attain perfection it requires a considerable range of the thermometer; the heat in their favorite valley—being high during the day, but low during the night—supplies this desideratum."

Possibly these varieties might flourish as far north as the mountains of South Carolina, North Carolina and Georgia. Who will procure and try them?

To Preserve Seeds.—A correspondent of the Cincinnati *Times* says that the following recipe will preserve garden seeds, and all kinds of grain and seeds from the ravages of cut-worms, birds, etc.: One pound sulphate of iron, one pound aloes. Dissolve in water heated to ninety or ninety-five degrees and pour over one bushel of grain, and in a similar proportion for a greater or lesser quantity.

The American Garden Bean.



Giant Wax Bean.

Origin and Use.—What is now known as the American Garden or Kidney Bean, is a native of India, whence it was brought to England near the close of the sixteenth century. It is at the present time universally disseminated and everywhere esteemed.

Used as snap or string beans, the dwarf varieties furnish a delicate and wholesome vegetable, easily digested and moderately nutritious. They may be preserved for winter use by cutting them in pieces and laying them down in salt, freshening them when wanted for use. The dwarf beans are also excellent taken from the pods after they are nearly or quite grown, and boiled and prepared in the same way that Lima beans usually are. For this mode of cooking we prefer the Pink Eye and the Early White Marrow. These, and also the Lima or butter bean, may be shelled and dried, when in the right state for cooking, and thus saved for winter use, but they must be subjected to a strong heat in an oven to ensure them against insects which often infest them in our climate. The bean, in its ripe state, is among the most nutritious of all vegetables. It should be eaten moderately and in connection with other less nutritious substances. It abounds in the constituents which produce muscle and fat, and is a good substitute for animal food.

Soil and Cultivation.—The dwarf or snap bean will thrive in almost any soil, but for an early crop it should be light and dry. If the ground be too wet, the seed is liable to rot. Bone-dust, ashes, and superphosphate of lime are very useful as manures. The bean is destroyed by a slight frost, and, therefore, must not be planted till danger from that source is over. Plant once in two weeks, through the season, to keep up a succession for the table. Plant in drills from eighteen inches to two feet asunder, dropping the beans two inches apart, and covering them about an inch deep. Give them frequent and deep hoeings, drawing a little earth to the stems.

Plant the common running bean in hills from the first to the middle of May, and give them poles when they begin to put forth runners, or, better, set the poles first, and plant the beans around them. Or they may be planted in drills along a border, or on each side of a

walk, and trained on a slight trellis of laths and lines, and thus be made ornamental as well as useful; but where the Lima bean will flourish and bear during the whole season, as with us, there is little temptation to cultivate the common runner, whose season, at best, is very short.

The Lima bean requires a strong, rich soil, and should not be planted till settled, warm weather, as the seed is very liable to rot in the ground, if the weather be cool.

Varieties.—Of the dwarf snap beans, the earliest kind we know is the *Early Feejee*, which is also hardy, prolific and excellent. *Long yellow six weeks* is early and productive. *Early Valentine* is not quite so early, but most excellent, as is also the *Refugee*, which is one of the most prolific varieties. *White Marrow* and *Pink Eye* are excellent as shelled beans. *Dwarf Wax* is peculiarly tender and rich as a snap. Of the common running or pole bean, the best varieties are the *Dutch Case Knife, London Horticultural, White Cranberry*, and *Giant Wax.* The pods of the last named are edible in almost all stages of their growth, and make the most delicious of snap beans.

Of the Lima bean, (*Phaseolus Limensis,*) there are three varieties cultivated in the United States—the *Green Lima*, the *White Lima*, and the *Carolina* or *Sieva.* The last is smaller than the others, but sweet, fine flavored, and very productive. We think it best of all, but some prefer the *White Lima.*

The Beet and its Cultivation.

Simon's Extra Early Beet.

Origin and Use.—The beet is a native of the south of Europe, and takes its name from the form of the seed vessel, which resembles the Greek letter *beta*, (B.) It is a delicious and nutritious vegetable, but somewhat difficult of digestion. It should be eaten only in moderate quantities It is most wholesome eaten with vinegar, or pickled. In preparing beets for cooking, avoid cutting, which causes a loss of color and flavor.

Soil and Cultivation.—A sandy loam is the best soil for the beet. In a cold, wet, clayey soil, unless rendered friable by a large admixture of sand, humus, coal-ashes, lime, etc., the roots become coarse, watery and insipid. Whatever the soil, it must be well enriched. A thoroughly rotted compost of stable manure and vegetable refuse, wood's earth, or sods and wood-ashes with the addition of a little *salt*—the last an important item, except on the salt lands of the coast—is the best fertilizer. Some good superphosphate may be added with advantage. Avoid coarse strawy manure, which tends to cause forked and misshapen roots.

Dig deeply and pulverize the soil thoroughly; then rake the bed off smoothly and draw straight drills from twelve to fourteen inches apart—the latter for the larger growing kinds—and one inch deep. Drop the seeds three

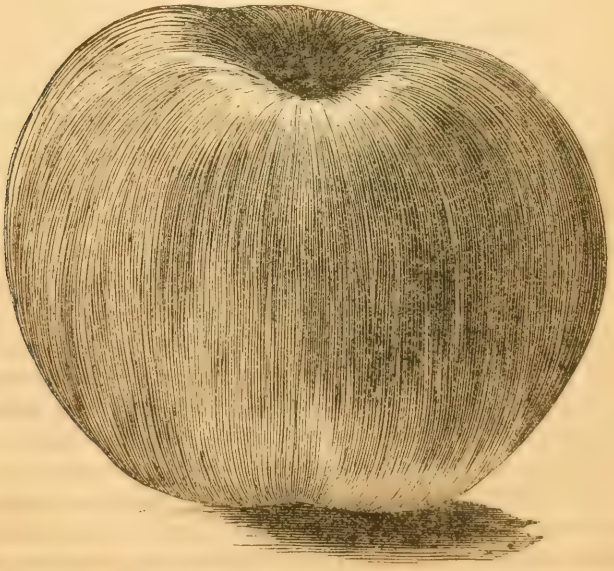
inches apart, cover smoothly, and press the earth firmly upon them. Radishes may be sown in the same bed, as they will be removed before the beets are ready for thinning. Keep the ground well stirred and free from weeds, and thin the beets to about six inches apart.

The time to sow the main crop is when the peach and the plum are in full bloom; but sowings of one of the early sorts may be made earlier. Late sowings may also be made, but after the weather gets hot, shading is generally required in this climate to obtain a stand.

Varieties.—The *Extra Early* or *Basano* is the best well-tested variety for the first sowings. *Early Blood Turnip* is also a good and well-known sort. *Dewing's Early Turnip* and *Simon's Extra Early Red Turnip* are new sorts which promise to be superior to the others named. The *Castelnaudary* is a small growing but most excellent French variety. The *Yellow Turnip, Long Blood, London Blood* and *Henderson's Pineapple* are all good varieties, and, for family use, the last named especially.

In gathering your beets, cut off the leaves an inch or two above the collar, and be careful not to break or bruise the root. To preserve them through the winter, store in a dry place, packed in sand.

The Willis Sweeting Apple.



This is an apple of Northern origin, but succeeding finely in some portions of the South. It is one of the best baking sweet apples known. It has the peculiarity of remaining a long time in bearing—that is, the fruit ripens gradually, remaining on the tree from two to three months. Season here from July to September.

Bouvardia Leiantha.

Bouvardia Leiantha.—Winter Blooming.

This is one of the most popular of the varieties, in consequence of its free blooming qualities; and is extensively grown by florists for a bouquet flower—its bright scarlet contrasting beautifully with the pure white double Camellia. It can be propagated from cuttings of the roots, which are taken off after the plant has done blooming, say March or April. These should be planted in a box or pot of light, sandy soil. When they have grown about two inches high, they can be potted into small pots, and shifted into larger ones. As they progress in growth, nip off the tops every two weeks during the summer, to give them a bushy form—or they may be planted out into the garden during the summer, and lifted in the fall; but this requires some care and experience—and we would recommend pot culture to the amateur cultivator, as the most satisfactory. Fresh loam, with well-rotted manure and leaf mould, will be found the best soil for nearly all pot plants; and we would recommend to all who wish to cultivate flowers successfully, to provide themselves with a heap of compost made by throwing up sods from a pasture field, also a heap of well-rotted stable manure, and, if practicable, leaf mould from the woods.

We subjoin a list of the most desirable varieties grown by our principal florists:

Hogarth—deep carmine.
" Hendersonii, French, white.
Leiantha—scarlet, yellow anthers.
" floribunda—orange-scarlet.
" grandiflora—flame-col., very large.
" splendens, crimson-scarlet.
Longiflora—pure white.
Grandiflora—pure white.
Rosalind—salmon pink.
Orion—dark pink.

H. A. Dreer, of 714 Chestnut street, Philadelphia, can furnish the plants, and to him we are indebted for the illustration, as well as hints on the cultivation of this popular winter-blooming plant.

The Carrot and the Parsnip.

1.—THE CARROT.

Early Scarlet Horn.

The carrot is supposed to have been introduced into Europe from the Island of Crete. The *Early Scarlet Horn* is the most forward in ripening, and fully equal in color and flavor to any other sort. It may be sown, in the South, from January to April inclusive, but for the main crop, sow when the peach is in blossom. The *Long Orange* grows very long and large, but is not equal in flavor to the *Early Scarlet Horn*. The *Altringham* is a bright-red variety, of an excellent flavor, and keeps well for winter use. It is not quite so hardy as the other sorts.

The carrot, like the beet, succeeds best in a light, rich soil. It must be deeply dug and well broken up, or the roots will grow forked and crooked; manure as for the beet. Choose a warm spot and and a calm day for sowing. Sow in drills half an inch deep, and for the *Early Horn* nine inches apart. For the other varieties twelve inches apart is better. Radishes may be sown in the same bed. Stir the ground frequently and deeply, and thin out to from three to six inches apart. The latter is the proper distance when the plants are to be left to grow to the full size. The directions for preparing and preserving them for winter use are the same as for beets.

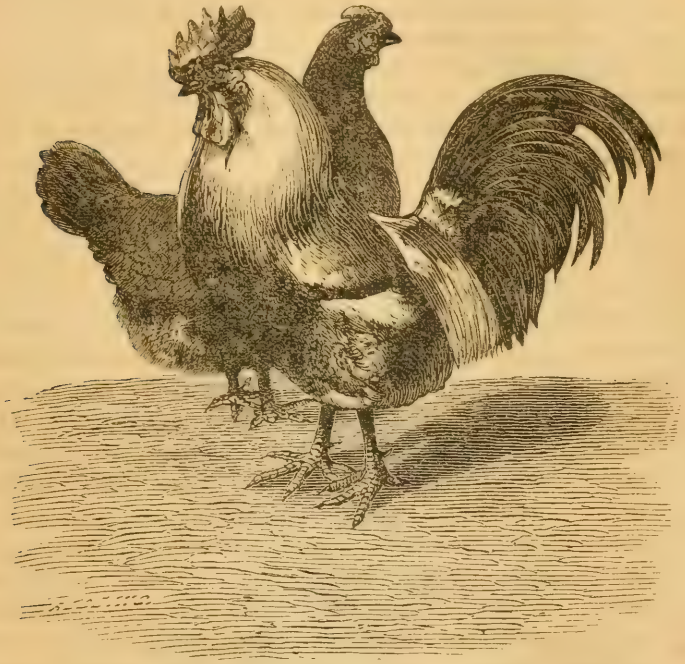
2.—THE PARSNIP.

This exceedingly nutritious and highly palatable root is not generally appreciated according to its merits. The French call it *le panais*. The soil, manuring and cultivation are the same as for the beet and carrot. Bone-dust and ashes are the special manures most likely to be required in the soil. The roots should be left in the ground and taken as required during the winter. Simply boiled, or boiled and then sliced and fried, they are excellent.

The common sugar or *Hollow Crowned* and *Student's Parsnip* are the best varieties.

Stock and Natural History Department.

Poultry-Farming in the South.



The Dorking Fowl.

We consider our climate far more favorable to the breeding of poultry and the production of eggs than that of the North. If these articles can be profitably produced anywhere, they can be so produced here; and that they can we have no doubt. To tell *how* it can be done, in detail, would require more space than we can give to the subject in a single number. The first requisite is a judicious selection of breeds. Some hints towards this, it is the purpose of the present article to give.

With the poultry-fancier who breeds to sell at fancy prices, a breed is valuable in proportion to the temporary excitement that may exist concerning it; but to the farmer who breeds for eggs and flesh, the highest priced birds are by no means always the best. He wants hardiness, good size, pleasant flavor and good laying qualities. In what breeds these desirable traits are most fully combined, it may not be so easy to determine as might in the first view of the case be inferred, since there are many conditions of uncertainty liable to interfere with most of the experiments made to test the matter. All that we can promise in this, or in future articles, is to give the best data at our command, whether derived from our own experience or that of others.

1. *The Black Spanish Fowl.*—To this breed has long been assigned a kind of aristocratic preëminence. The true white-faced black Spanish fowls always command high prices, and have never lost favor with the breeder and the amateur. Their beauty and lofty bearing alone will always ensure them a high position; but, in addition to this, the hens are great layers, having in this respect, we believe, no superiors. We refer here, of course, to the *true* white-faced breed. There are mongrels passing for black Spanish which have really no name, and are worthy of none.

The Spanish fowls bear confinement well, are not large eaters, grow rapidly, mature early, and are excellent for the table.

Their faults are: 1. They are not good sitters or mothers. 2. The chickens are somewhat delicate and difficult to raise. 3. They lack size—that is they are only moderate in this respect.

The black Spanish is a favorite fowl with us, but we cannot fully recommend the breed for general use.

2. *The Dorking Fowl.*—The Dorking is an English fowl, taking its name from a town in Surrey County, England, where it is supposed to have originated. There are two varieties, the colored and the white. It is of the former alone that we wish to speak here.

The colored Dorking is a fowl of rare beauty, large in size, symmetrical in form and often gorgeous in plumage. Its flesh is white, firm and of excellent flavor; and for the general purposes of the table it is inferior to none,

The Polish Fowl.

although, as regards flavor alone, the Game fowl would, perhaps, take precedence. As layers, the Dorking hens take high rank, but are, we think, slightly inferior to the Spanish. They are persistent sitters, and make excellent mothers and nurses. In size, these fowls rank next to the Asiatic breeds. There is, perhaps, no breed against which so few objections can be brought.

3. *The Polish Fowl.*—No such fowl exists in Poland at the present day, and where the breed got its name, no one seems to know. It matters little. Their beauty and excellence are undisputed. The large top-knot is one of the principal characteristics of the Polish fowl, and is conspicuous in all its varieties.

The varieties of the Polish or Poland fowl are numerous; but the principal ones are the White-Crested Black, the Golden Spangled and the Silver Spangled.

The Polands, and especially the Black variety, are generally, but not invariably, great layers, commencing early in the spring, and seldom wanting to sit till late in the summer, if at all. They cannot always be depended upon to hatch a *clutch* of chickens, even when they manifest a desire to sit, frequently deserting the nest after five or six days' occupation. They are not quite so hardy as some other breeds, but with a fair degree of attention are easily reared. As a table fowl, the Polish is among the best. In size, they are comparatively small.

The Dark Brahma Fowl.

4. *The Brahma Fowl.*—This breed is clearly of Asiatic origin, so far as blood is concerned, but just how and where it became a distinct and fixed variety is a disputed point, which we do not care to discuss.

We have already published something about the Brahma fowl, and, though without personal experience with it, we are disposed, from the testimony of friends who have tried the breed, to believe it to be an exceedingly valuable one.

The Brahmas are very large, very hardy and good layers, good sitters and excellent mothers; and the chicks are easily reared. The main, if not the only objection to them, is the coarseness of their flesh, in which respect they resemble the Cochins and other Asiatic varieties.

A writer in the *Rural New Yorker* advocates a cross between the Brahma and the Dorking—Brahma hens with colored Dorking cocks, the chicks from which, he says, are hardy, easily reared, grow fast, and in four months, without extra feed, will dress four to five pounds each of fine-grained, well-formed, plump-breasted, well-colored flesh, fit for the table of any amateur or epicure, and always commanding a good price in market. The hens from this cross are even better and more continuous layers than either pure Brahma or the Dorking; but if wanted to breed again, the farmer must keep one coop separate of Brahmas—say a cock and two hens—and so also of the Dorkings, and thus yearly with the cross of pure bred birds, cocks of the Dorkings and hens of the Brahmas, keep up the "*Farmer's Breed for profit.*"

We are inclined to think he is right, but other crosses should be tried to determine which is best. We propose to speak of other breeds in future papers, but consider those we have mentioned as among the best.

Experience with Chester White Hogs.

GENTLEMEN: Knowing that there are a great many persons prejudiced against the Chester White, I furnish you with an experiment I made with six of them. I am fully convinced that if I had put them up in a close pen, and given them all my attention from the start, I would have made a third more and saved all the manure.

After they were weaned they had the run of the corn-field till the middle of February. I furnish you with a statement of the amount of food consumed by them up till the 15th November, the time they were killed, and I know it to be correct, for I fed them with my own hands:

From February 15th to March 15th	2	bushels corn,	$1 20	per bushel—	$ 2 40
" March 15th to June 15th	8	" "	1 25	"	10 00
" June 15th to July 15th in the wheat field.					
" July 15th to September 6th	6	" "	1 30	"	7 80
" September 6th to October 6th	25	" "	1 35	"	33 75
" October 6th to November 6th	40	" "	1 15	"	46 00
" November 6th to November 15th	4	" "	1 15	"	4 60
	85				$104 55

They were put up in a close pen September 6th. I intended putting them up sooner, but found it too warm. The weight of these animals when butchered was as follows:

1	290 lbs. net.	14½ months old, half Chester white and half Essex.	
1	283 "	14½ " " " " "	
1	275 "	14½ " " " " "	
1	260 "	14½ " " " " "	
1	245 "	10½ months old, half Chester white, quarter Suffolk, quarter Berkshire.	
1	240 "	10½ " " " " "	
6	1,593	12½ cents per lb	$199 12½
Deduct amount of food consumed, 85 bushels corn			104 55
			$ 94 57½
Add 32 lbs. lard from the entrails, 25 cents per lb			8 00
Add 2 loads manure, $5 per load			10 00
			$112 57½

Which leaves a clear profit to each hog of $18 76. My mother made two hundred and seventy pounds of lard from them, which leaves forty-five pounds to a hog. With great respect,

J. E. LEWIS.

I hereby certify that I butchered these hogs, and saw them weighed; the weights are correct; and that they were the finest I ever saw of the same ages.

JOHN CAMINADE.

Common Shrew Mole.

The Shrew Mole.

In a late number of The Rural Carolinian appears a paragraph in reference to the destruction, and and trouble to gardeners, caused by this little animal. The inquiry is raised whether they feed upon roots, vegetables, etc., and whether a plan cannot be devised to kill them.

As touching upon the question of their food, allow me to furnish an extract from the standard work of Audubon and Bachman upon the quadrupeds of North America.

In speaking of the habits of the Mole, these authors say:

"The inquiry has often been made if the shrew mole does not feed upon the grains or roots of the corn, peas, potatoes, etc., planted in rows, or hills, why is it that this pest so ingeniously and so mischievously follows the rows, and as effectually destroys the young plants as if it had consumed them? We answer, it is not the spirit of mischief by which the mole is actuated; it is the law of self-preservation. In the rows where these seeds have been sown, or these vegetables planted, the ground has been manured; this, and the consequent moisture around the roots of the plants, attracts worms and other insects, that are invariably found in rich, moist earth. To the accusations made against the shrew mole as a destroyer of potatoes and other vegetables, he might often with great truth plead an *alibi*. Le Conte's pine mouse (*Arvicola pinetorum*) is usually the author of the mischief, whilst the blame is thrown upon the innocent shrew mole."

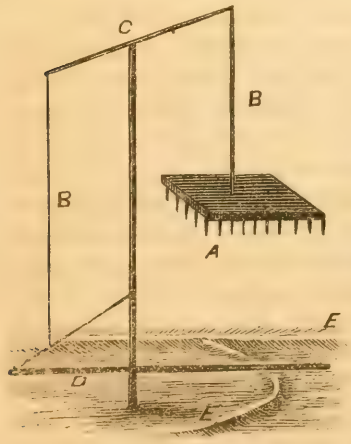
It is the common idea that the mole feeds upon the roots of tender plants, grasses, etc.; while the fact that the mole devours great quantities of earthworms, slugs and grubs, all hurtful to the fruit trees, to the grasses and the peas and other vegetables, seems to be unknown and overlooked.

Naturalists insist that the food of the mole is earthworms, slugs or grubs. This may be true, but I have destroyed them in my garden by placing poison upon pieces of bread and placing the same in their furrow. I have noticed, likewise, that along their furrow made under the pea rows immediately after planting I have been unable to find any seed. I have noticed the same in cucumber hills, that had to be repeatedly replanted. Now, what became of these seeds, if the mole did not eat them? It is true that now and then I have seen the pine mouse in my garden; but it is unfair, I think, to attribute all this destruction to him, especially so as he does not make furrows like the mole. It is justice to say, however, that naturalists accuse the pine mouse of following in the track of the mole in search of food, and that he is the one to whom all the destruction of vegetables is due.

As to the second inquiry, Is there no way to catch them and prevent their depredations? I submit to the readers of THE RURAL a very simple contrivance of mine, that is "*short, sharp and decisive,*" and which will be found to answer the purpose admirably.

Among other habits of the mole, it will be found that they invariably traverse the same furrow. Dr. Goodman says: "It is remarkable how unwilling they are to relinquish a long-frequented burrow; I have frequently broken down, or torn off, the surface of the same burrow for several days in succession, but would always find it repaired at my next visit."

It was from noticing this habit of the mole, which lead to my contriving the following trap for their destruction:



Gary's Mole Trap.

A. Block with spikes.
B. Cords attached to cross-bar C.
D. Figure-4 triggers.
E. Mole track.

Along the recent track of the mole, select a soft place free from rocks or obstructions, to place the "dead-fall," carefully pressing down the furrow for a small space. At the side of the furrow, where it has been levelled, place an upright post, or rather stick; next, provide a bar to go across the upright, to the ends of this cords are attached, one to be fastened to the block, the other to one of the triggers.

The block is made sufficiently heavy in falling to drive the spikes, (which are placed in the under surface, and sharp,) into the ground.

The spikes should be four inches in length.

When the trap is set, the long trigger lies upon the surface of the furrow, and the block is elevated. As the mole returns, he presses up the ground that has been flat-

tened, which raises the long trigger, and the trap is thrown, the block falling and sticking the spikes in the body of the mole. The triggers are the old figure 4, so well known to all boys who make traps to catch birds.

To give your readers a better idea of the trap, I send herewith a rude drawing of the same, which I trust your artist can make out, so that he can illustrate my idea and make it understood. F. F. GARY.

Ducks for Profit.

Why is it that our farmers, and fanciers, too, almost ignore the good qualities of the duck?

They are no more difficult to rear than chickens, if proper care is taken the first few weeks, and they mature *much* earlier. The *common* duck does not require *any* more care; but it is not to these that we specially refer. We do not see the advantage of raising ducks that weigh two or three pounds at maturity, rather than those that will weigh six to eight. And there is just about that difference between the common duck and either the Aylesbury or Rouen varieties. It cost hardly if *any* more to raise an Aylesbury or Rouen than the common mud-puddle variety; and laying beauty (which is a great desideratum with us) aside, there is still the gain in weight as well as the gain in eggs the coming year.

Either of the above varieties is desirable, and the choice may be said to lie almost with one's fancy. Both are excellent layers, frequently commencing to lay in the fall and continuing until cold weather, recommencing in February or March, and not ceasing until July or August, and mature at about the same age, reaching about the same weight, which *sometimes* attains eighteen to nineteen pounds per pair This weight, though, is *very rare.*

It seems to be the impression with many, that ducks cannot be kept except with a pond or stream on the premises. But this is a mistaken notion. True, a running stream, or when that is not to be had, a pond of water, is a great help, but it is not a *necessity.* We have known fine broods raised with a large tub or box sunk into the ground and filled daily with fresh water. A good way to do this is to excavate the ground under the tub to the depth of eighteen inches or two feet, and fill the hole up with stones; have a hole and plug right over the excavation, and the water will run off easily and freely, and not keep the ground around the tub continually muddy.

"But they eat so much," is the reply; "why, half a dozen ducks will eat a half bushel of corn a day." Now, reader, did you ever compare *critically* the amount consumed respectively by a duck and a hen? If not, do so, and you may discover less difference than you persuaded yourself there was. The idea of ducks eating so much is a good deal like the Dutchman's pig. Hans had one leetle pig, no bigger dan von cat. He give ter leetle pig von pail of swill; piggy eats ter swill all up; den he puts him in ter pail, and he no fill ter pail half full. A. M. HALSTEAD.

Department of Mining and the Mechanic Arts.

How to Construct Water-Powers.

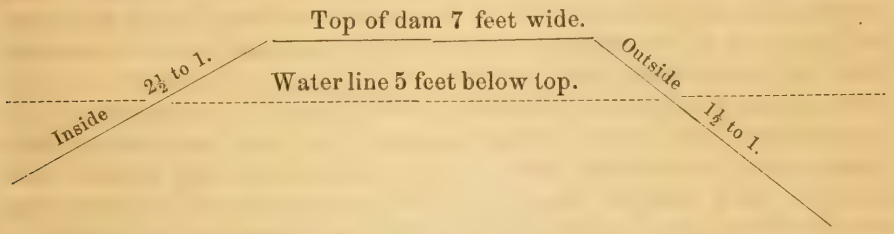
PAPER NO. II.

The last few years have demonstrated that the best material for building forts and dams is common earth, and if a dam is *properly constructed* of earth, there is no reason why it should ever break. The first essential in making a dam, is to provide ample passage for all the surplus water that may by any contingencies be thrown into the mill-pond, and this ample space adds much less *extra* cost to the construction than is usually supposed, for the abutment walls to the waste-weir, once properly constructed, (and they have to be so built, no matter how narrow the weir is made,) it costs about the same sum for every foot of waste-weir as of dam—that is, if you build two hundred feet of waste-weir, or one hundred feet of it and one hundred feet of earth-work, the cost will be about the same, only in the first case you will have twice the area for discharging surplus water, and, therefore, your dam will be safer.

In constructing a dam of any considerable size, we would advise that a competent engineer be engaged to survey the location, so as to find out just where the smallest expenditure will produce the greatest power. Then let him map out and stake off the work, and you may dispense with his further services. The location being settled, the bed for the future dam should be thoroughly cleaned of all foreign matter and then well plowed up, and then a good centre-ditch or key, (varying in size and depth according to the size and nature of the work and ground,) should be cut so as to form a perfect union between the new earth and the foundation. While this is being done the waste-weir can be put in, and if so you can have the advantage of it in *tempering* the dam as the work progresses—a precaution which should by no means be omitted, as no dam is ever thoroughly settled till it has been settled with water. I have been cognizant of at least three cases, in which every other precaution but this was taken; but this having been neglected, the entire works, costing in one case several thousand dollars, were swept away as soon as the water was raised to a full head, and had had time to penetrate the dam, and penetrate new earth-work *once* it always will. As to the matter of handling earth, we presume that nothing need be said; each man will go to work in his own way, and according to his means and the nature and size of his work. Dams will be equally good, whether built by hand-barrows, carts or cars, as no dependence is to be put on settling earth-work for dams by the trampling of men or animals; *nothing is really reliable but thorough tempering with water*, which should be done at *intervals*, as the work progresses, and *not* all at one time, when it is finished. I have practiced the following method, and find it works well: When the entire work has reached a height of say

five feet, the waste-weir being in, commence to raise the water, but go on with the work; when the water has reached a height of say three feet, and thoroughly seeped through the new earth till it begins to show itself on the outside, open the gates and let it run down and dry out; as the work progresses repeat this process, raising the water higher and higher each time, taking the precaution never to allow it to reach the top of the work at any point; for if water ever gets over the top of an earth dam it is gone; and when you have raised it and allowed it to run out for the last time, you will have a *thoroughly tempered* dam, more so than can be done in years by any other process.

I have found the following scale to be ample for dams constructed of common earth; it will give a resisting power five times as great as the pressure:



Top to be seven feet wide, and five feet higher than the highest point the water is ever expected to rise; outside grade, one and a half to one; inside grade, two and a half to one. This scale will answer for any height of dam, as the top being fixed at seven feet in width—which is rather larger than necessary for dams under fifteen feet head—and the two slopes being equal to four to one, may be continued to any height, as the pressure of water depends alone on its height, and not on the *size* of the surface. The Atlantic Ocean does not press harder on its sides than would the smallest sheet of water if of equal depth. The washing of the water after it is raised, and of hard rains, will bring the inside grade in time to at least three to one, and consequently wash away some of the top portion of the earth; but this can be replaced as the washing goes on and in leisure time. A good turf of grass, etc., should be made to grow all over that portion of the bank not covered by water, and for this purpose we have tried with success the low-country joint-grass. Its millions of roots will in a short while form a turf which will prevent all wash. It will pay the owners of dams to plant it out on them, using a little manure to help it get a start, which is all it wants, as after that it will take care of itself.

The construction of a proper waste-weir is of the utmost importance to all owners of water-powers. Not only should it be fully large enough to discharge any surplus water which the stream may throw upon it, but it should be built, and can be built, so as to avoid the probability of being blown up, and thus destroying for a time the use of the power, and entailing heavy expenses in reconstruction. We would advise that the work be located *at least* two feet below the level of the tail-race; that it be strongly constructed,

and have ample wing-walls both inside and outside, and every precaution taken to make perfect joints between this work and the embankment. It should be strong in proportion to the size—mainly height—of the work. Wood makes work strong enough and durable enough for small powers; but for most points of the South we would advise hard brick, as better than wood and cheaper than stone, or a combination of wood and brick may be used, wood *below* the water line, where it never rots, and brick above, where the wood would rot. We consider, for this latitude, brick better than stone, as we have no frosts that will hurt it, and with it you can make a perfect joint, while in stone walls this is almost impracticable; very few stone dams but what leak, and all leaks in dams are more or less dangerous. The gates to the waste-weir should be well fitted, and arranged to hoist easily, for when a flood is pouring down on your dam it won't do to have a hitch in the gates. At least one of them should go to the bottom of the weir, so as to enable you to run off all the water whenever it becomes necessary to do so.

It was our intention to speak in this paper of the proper kind of wheels to be used, but we do not wish to tire the reader; and if he will devote a hundredth part of the time to this article that we have given to the subject to find out the truths it contains, simple as they may seem, he will consider the lesson quite long enough. Remember that water dammed up becomes a great power, and that to hold it requires great strength; that all leaks about dams are dangerous, and therefore the barrier you are constructing must be perfect. We have confined our remarks to earth dams, because for most places in the South they are most practicable. Of course, in large rivers, a dam must of necessity be "tumbling," and constructed of some other material, as wood, brick or stone. Where earth and stone are used together, the stone should be put on the *outside* to add its weight to resist the pressure. If thrown inside the water will penetrate the interstices, and it will be of no practical use.

We must speak of water-wheels in our next. UP COUNTRY.

Peat I.

Among the best known and largest deposits of peat are those of Ireland and Germany, the latter being situated on the coasts of the German Ocean and Baltic Sea. They comprise large, uncultivated and sterile tracts, thinly inhabited, and often impassable during the wet season. Grisebach in describing the moor of Bourtange, on the Hanoverian-Dutch boundary, mentions a spot where standing on the level ground the horizon appears, as on the ocean, a perfect circle—no object, either nut tree or shrub higher than a foot or so, impeding the view. This moor covers a surface of between fifty and sixty geographical square miles; and Grisebach reckons the average depth at ten feet. The peat bogs of Ireland are calculated to cover 3,000,000 acres; and to be thirty feet deep. The deepest peat formation is that of Allen, in Ireland, thirty-eight and a half feet in thickness.

Peats differ in regard to the stage of decomposition. Some present a more or less homogeneous mass, without evident traces of organized vegetable matter; while others contain portions of but partially decomposed roots, or even shrubs and trees. When the decomposition of the vegetable matter has reached a certain stage, it is converted into a mass consisting of combustible and non-combustible ingredients, which, when properly freed from the water, with which in the fresh condition it is soaked, becomes an important material for burning.

The value of any peat depends on the amount of the combustible ingredients, and their proportion to the water and ash, also upon its density.

The amount of water in any fresh peat averages about 70 to 80 p. c.; of ash 1 to 5 p. c.—the rest being organic or combustible matter, composed of carbon, hydrogen and some nitrogen.

The formation of peat is due, with the stagnation of water, to the peculiar growth of certain plants, (*Sphagnum, Erica tetralix, Calluna vulgaris*, etc.,) which slowly decomposing furnish, by the products of their decay, material for subsequent vegetation. In consequence of this decomposition the vegetable tissues gradually disappear; and the peat thus formed becomes rich in carboniferous matter.

Certain of the non-volatile constituents of the peat are rendered soluble by the decay of the organic matter and the liberation of carbonic acid, (as the alkalies, manganese, magnesia, chlorine, etc.,) and are separated from the insoluble sulphates, phosphates and silicates of lime, iron and alumina. (Vohl.)

According to Scheerer, the air-dried peat contains, without reference to the small amount of ash or the nitrogen,

Carbon	45.0
Hydrogen	1.5
Water of combination	28.5
Hygroscopic moisture	25.0
	100.0

According to Knapp:

Carbon	44.5
Hydrogen	4.5
Oxygen and Nitrogen	26.2
Ash	8.5
Water	16.0
	99.7

The nitrogen amounts generally from 0.6 to 6.33 p. c., averaging 1.5 p. c.; and is due, perhaps, to the considerable absorption by the peat of ammoniacal compounds from the air, and from decomposed animal and vegetable substances in the soil. (Kehl.)

The average amount of ash in thirty-four analyses of peat from different localities, (given in the last German Edition of Muspratt's Chemistry,) is 7.30 p. c.; and consists of silicates of alumina, lime and iron, lime and magnesia, carbonate and sulphate of lime, small quantities of phosphoric acid and alkalies.

By various methods of air-drying the water in peat may be reduced from 80 to 20 p. c. The thicker and heavier the peat is, the greater its value as burning material, and the less the expense of transportation. But even if peat could be compressed to the density of coal, its powers of affording heat would be less, as the organic matter of coal is richer in carbon and hydrogen.

The usual methods of preparing peat for the market, the process and products of its dry distillation, as well as its agricultural use, will be spoken of at another opportunity. At present I wish to call attention to certain valuable deposits of peat which exist in this State, in the hope that they may be developed for the advantage of the public; and also to attract the attention of those who, possessing peat bogs, have never given the subject the consideration which it deserves.

I have examined several specimens of peat. The first was for J. R. Dukes, Esq. Unfortunately it had been artificially dried before being received for analysis. This sample was analyzed with reference to the nitrogenous material and the alkalies. The organic analysis gave 1.04 p. c. of nitrogen, equivalent to 1.26 p. c. of ammonia.

The peat afforded on combustion, between 4 and 5 p. c. of ash, which contained 0.6 to 0.7 p. c. of potash, and 1.0 to 1.20 p. c. of soda.

Messrs. J. R. Dukes and J. Fraser Mathewes forwarded me two kegs of fresh peat, marked Nos. 2 and 3, from a deposit which Mr. Mathewes thus describes:

CHARLESTON, 20th December, 1869.

J. R. DUKES, Esq.—*Dear Sir:* The two kegs of peat marked Nos. 2 and 3 came from an extensive bog which lies between the Edisto and the Ashepoo Rivers, running through the plantations of the estate of my father, J. Raven Mathewes, my brother, W. R. Mathewes, and my own plantation.

A recent examination of this bog with a cylinder three inches in diameter, taking samples the whole length and width of the bog, (about twenty in number,) showed as follows: the bog extends from river to river, about two and a half miles in length, and about half a mile wide, with an average depth of nine feet, and the peat is uniform in its appearance from top to bottom. This bog is situated in St. Bartholomew's Parish, Colleton County, in this State.

Yours, respectfully,

(Signed,) J. FRASER MATHEWES.

The sample in keg No. 3 is from a part of the bog subjected to overflow of brackish water; while that in No. 2 is never overflowed but by fresh water.

The analysis of the peat No. 2 showed that it contained 81.09 to 81.90 p. c., water expelled at 212° Fahrenheit. The residuum contained 0.45 p. c. nitrogen, equivalent to ammonia 0.55 p. c. When dried at 212°, the peat consists of organic matter and water of combination, 96 p. c.; ash, 4 p. c.

The amount of potash is small, being only 0.0118 p. c. in the fresh peat, or about 1 p. c. of the ash; phosphoric acid only in the faintest traces.

It will be observed that the amount of ash in the thoroughly dried peat is small, compared to that of the volatile ingredients.

Peat No. 3, when fresh, contained 84.65 to 88.50 p. c. of water, expelled

at 212° F.; and 15.35 to 11.50 p. c. of residuum. This residuum was composed of volatile ingredients..... 91.47
Ash..... 8.53

100.

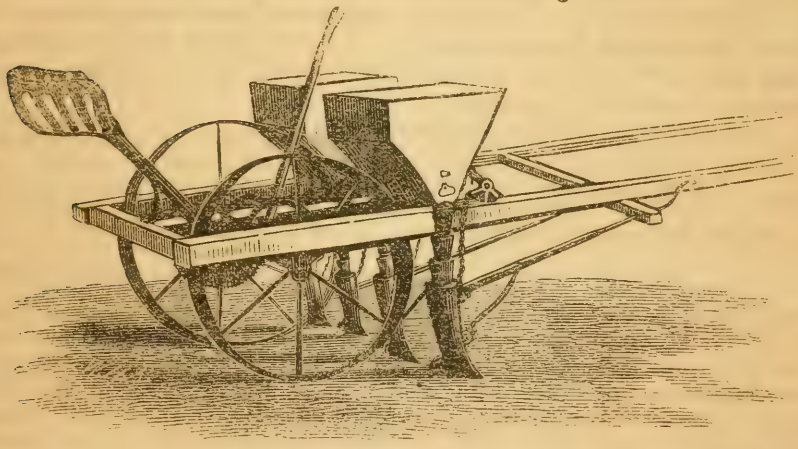
The ash contained still less potash than No. 2, (*i. e.*, about 0.007 p. c. in the fresh peat,) and very slight traces of phosphoric acid. It was composed principally of sand.

This locality then is, in consequence of the larger percentage of ash, of decidedly less value than No. 2, which may be considered as of superior quality.

CHARLES U. SHEPARD, Jr., M. D.

Laboratory of the Medical College, Charleston, S. C.

Dotterer's Patent Rice-Sowing Machine.



This machine is one of the steps towards securing the best work at least cost to the rice planter. As shown by our cut, it will be seen that at one operation the making of the drills and perfect distribution of the seed is accomplished in four trenches by using one horse and driver, instead of the old process of four trenchers and a like number of sowers. The outer trenchers or plows being outside of the wheels, the planter is enabled to work as near the ditches as his work requires, and does his work with certainty, being sure that whatever quantity of seed per acre he desires is equally distributed, ensuring a good and regular stand. The machine is a combination of trenching plows, arranged under a pair of hoppers for containing the seed, and this is distributed by screws operated from gearing attached to one of the wheels. The driver's seat being in rear of the plows, he has entire command of his work, and any irregularity can be immediately corrected. Some of those who have used it claim a saving of fourteen hands per diem by its use over the old process.

This machine is the invention of one of our young townsmen, Mr. Thos. D. Dotterer, and has been in use for three or four seasons, giving general satisfaction. Its value in the saving of labor can only be fully understood by those who have used it. It is now much improved, and manufactured at the foundry of Mr. Wm. S. Henerey, 314 Meeting street, Charleston, S. C.

THE RURAL CAROLINIAN.

VOL. I.] CHARLESTON, S. C., MARCH, 1870. [No. VI.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

SUGGESTIVE FACTS.

That it is desirable to diversify our industry, and especially our agriculture, is generally admitted. If we devote ourselves too largely to cotton, we shall at once reduce its value and eventually render its cultivation profitless, while the neglect of other crops will at the same time ruinously enhance their price. Wheat culture in the West furnishes an illustration. The price of a bushel of that grain in Minnesota to-day is but little more than the cost of a pound of butter. Why? Because, wheat having been high, too large an area has been devoted to the grain crop, while the raising of cattle has been correspondingly neglected. The mere wheat grower is now impoverished, while those who were wise enough to devote themselves to a more diversified agriculture are reaping the advantages of that course. The cotton grower should profit by this lesson. An over production of cotton, it is true, is not likely to be so quickly reached as that of wheat or corn might be; still its price may sooner than we think go down below the present cost of production.

Our thoughts have been particularly directed to this subject by some facts and figures lately been laid before Congress by our zealous and efficient Commissioner of Agriculture, Hon. Horace Capron, to whom we are indebted for a copy of his letter to that body.

He suggests that to offset the diminished value of an excessive production of cotton, a greater breadth of land should be devoted to the sugar-cane, rice and various fruits, especially grapes suited to wine-making, but that, above all, we, especially at the South, should introduce from other countries new and valuable plants suited to our climate. Among these he instances tea, coffee, *cinchona*, (Peruvian bark tree,) the castor-oil bean, *jute*,* Esparto grass, Sisal hemp and the palm-oil tree—the last two in Florida. Of the products of these plants we now import to the value of more than $40,000,000 per annum.

The imports of New York City alone, during the year 1869, include, among the products, plants which could, it is believed, be profitably grown in the South:

Hemp	114,018 bales, valued at	$2,604,067
Castor Bean	9,125 packages, valued at	49,823
Madder (root)	7,091 packages, valued at	2,541,778
Sumac	58,698 packages, valued at	329,975
Esparto Grass	2,205 packages, valued at	265,488
Olive Oil	42,611 packages, valued at	37,679
Jute (butts)	29,668 barrels, valued at	81,192
Jute (cuttings)	5,085 packages, valued at	21,583
Tea	838,368 packages, valued at	12 574,493
Coffee	1,024,633 bags, valued at	14,067 280
Peruvian Bark	23,984 packages, valued at	592,375
Lemons, packages valued at		507,657
Oranges, packages valued at		856,865
Bananas, packages, valued at		153,487
Figs, packages valued at		147,337
		$34,989,079

Prominent among the substances which may be grown and made to constitute a new product of industry, are the various dye-stuffs which yield either coloring matters or tannin. Such are the sumac trees and madder plants, the present imports of which are at a very high figure, as may be seen by a reference to the table. The climate of many of the Southern States is well adapted for the growth of these plants, and they should (Mr. Capron thinks) be introduced at once into our ordinary list of crops.

Now, we recommend due caution and care-

* *Jute* is a fibrous, grass-like material produced in the East Indies, and used in the manufacture of mats, carpets, bagging, etc. The annual consumption in England alone is estimated at 100,000 bales, valued at £20 each.

ful investigation in regard to these and other new branches of agriculture, and warn our readers against blindly rushing into any of them without first counting the cost and weighing well the probabilities of failure or success; but, at the same time, we believe that most of the plants named can and will ultimately be grown here with profit, and be made to contribute largely to the prosperity of the country. Let us experiment with them in a small and safe way at first, and enlarge our operations as we may find them profitable. One may take up hemp, another the castor bean, a third the *jute*, and so on with the whole list, as climate, soil, and other conditions may seem favorable.

LETTER FROM COLONEL AIKEN.

I have generally found THE RURAL CAROLINIAN highly complimented and sought after. True, an occasional skinflint presumes to advance the fossilized idea that book-farming "won't pay," and his son depends on borrowing, if THE RURAL contains anything he wants to read; but planters everywhere are in search of agricultural information, and manifest rather a desire to subscribe to such a first-class monthly.

The subject of manures is the absorbing question in this section at present, and the variety of fertilizers, with their respective advocates, are as numerous as the buyers; some of these manures I have never heard of before. Beside the standard manures, such as Peruvian Guano, and the older manipulated phosphates, I have seen advertised for sale Chappell's, Bradley's, Reid's, Bomer's, Willingham's, Ruth's, Cheaspeake, Navassa, Boutwell's, Paterson's, Bergir's and several others not introduced into South Carolina. The Charleston phosphates are but little known here, and probably less used.

The labor question is a knotty one here, too. As many opponents as advocates of immigration can be found; and the existing laborer is certainly more squalid and less effective than the negro of South Carolina. To systematize the labor of such beings will surely be the work of more than one generation, and, ere it is accomplished, the race will be extinct. It is lamentable to philosophize upon the labor, condition and future of the unfortunate negro. As certainly as day follows night, he treads the path of the red man, and walks it, too, with an accelerated pace.

The geographical aspects of this country are by no means inviting. Its tall pine trees and level territory are distressingly monotonous; and, as seen from the cars, nowhere impress the traveller with local enterprise or thrift. Occasionally a plow could be seen turning the soil in the rice-fields, which denoted progress; for I believe rice planters generally are wedded to the idea that the hoe, and not the plow, was the implement for the rice-field. Why, I never could understand. Indeed, I heard an intelligent planter say, in Savannah, that, in addition to the caterpillar, there was another cause of an ominous future to the sea island planter, and that was, in substituting short for long staple cotton, (which he approved,) the product would be diminished in value, while the area would not be increased, as *they could not use the plow*. I did not attempt to argue the question, but told him to read THE RURAL, and he would soon see an explosion of that inherited delusion.

The climate, too, here is as mellow as May. To-day, (Feb. 11th,) I am writing in sight of peach and plum blooms, which I very much fear, however, are not so rare to-day as the fruit will be next June. Home-hunters from Maine to Idaho are occasionally seen in this country, and are enraptured with the climate. An intelligent Wisconsinite said to me the other day, "You people should all be rich down here, for I'm told you can work every month in the year." Said he, "we can work but five months in the year in Wisconsin, and generally eat up during the other seven what we made in the five." What a lesson such opinions should read to us Southerners! Climate, soil, health, products and longevity, surpassed nowhere in the world; how content and energetic we should be!

D. WYATT AIKEN.

Thomasville, Ga.

THE COMING GRAND FAIR.

That old, honorable and honored institution, the South Carolina Institute, is giving evidence that its brilliant reputation for energy, success and usefulness is not likely to suffer. It was chartered for the promotion of

the industrial resources of the State and the South, and it remains true to its trust. The magnificent fairs formerly held in its fine hall; the talented orators who have graced its annual meetings with their eloquent addresses—such men as Gov. Jos. H. Lumpkin, Hon. Jas. H. Hammond, Hon. Edmund Ruffin, Hon. B. F. Perry, Gov. Jas. L. Orr, Hon. Wm. M. Lawton and Judge Aldrich, for instance—and its steady devotion to the agricultural and mechanical interests of the country, are well remembered; and it is gratifying to know, that while there is "life in the old land yet," there is also life in our pet institution, and a determination not only to do something worthy of its established reputation, but to outdo itself in a grand fair, to be held in this city in November next.

Among the attractions to be furnished on the occasion will be races and trotting matches on the Washington Race Course; a tournament; a regatta of sailing and rowing boats in our beautiful harbor; excursions to the now historic sites of Sumter, Moultrie, Johnson and other fortifications, and to the celebrated phosphate beds on the Ashley River. We anticipate a brilliant week for our good old city.

This will be the first of a series of State fairs in the South. That of the State Society at Columbia will follow, then will come those at Atlanta, Montgomery and others.

A list of premiums, which we learn will be a splendid one, will be issued in our next, and the work of preparation pushed forward with untiring energy.

LABOR AND IMMIGRATION.

The South Carolina Institute has initiated an important movement designed to promote immigration to this State, and the development of its latent resources. At a meeting held on the 15th ult., the following resolution was submitted by Hon. W. D. Porter, and, on due consideration, was unanimously adopted:

Resolved, That the President of the South Carolina Institute be requested to invite delegations from the various county agricultural and mechanical and immigration societies throughout the State to assemble in Charleston, on the first Tuesday in May next, (3d,) to take into consideration the questions of labor and immigration, and means for further development of the agricultural interests of the State.

In accordance with this resolution, the following circular letter has been addressed to the officers and members of the county agricultural societies:

GENTLEMEN: As the executive officer of the State Institute Association, I take the earliest opportunity to lay before you the appended resolution, and respectfully to invite an earnest consideration of its import, and the appointment of such number of delegates as your association, club or organization may deem proper.

Authorized credentials from the presiding officer of the respective societies will pass delegates on the South Carolina Railroad for half the usual fare, as doubtless will be adopted by other lines of road.

The paramount importance for a broad and united organization, as indicated by the resolution, is self-evident.

To induce settlers, immigration and efficient laborers to till the fertile and genial lands of South Carolina, and bring out her various resources of manufacturing and other industrial pursuits, demands coöperative action of the people, from the mountain region to the seaboard, and the influence of all true men ought to be enlisted.

The metropolis of the State, with the various lines of road and steam and sail ships at command, with enterprising and willing merchants, aided by the parent of all pursuits, agriculture, and with practical counsel, can form such an association as will inspire hope for the future and render success obvious.

I have the honor to tender my sincere respect for your society.

W. M. LAWTON,
President South Carolina Institute.

FLOWER AND FRUIT EXHIBITION.

The new Charleston County Agricultural and Horticultural Society has taken hold of the work before it with a degree of spirit and energy which does credit to the young blood embodied in it. Among the excellent movements already set on foot, is one for a Floral and Fruit Exhibition, to be held in this city in May next, of which we shall have more to say in our next number.

The Executive Committee, in their report on this subject, say:

We beg to bring to your attention a growing love in this city for flowers, and solicit your contributions. Whatever plants or flowers you may send will be carefully guarded, exhibited, cared for, and disposed of as you may desire.

We propose a silver medal for the best show of the following plants in blossom, (or if preferred, the value (five dollars) of medal in money,) viz: Achimenes, Aster, Azalea, Balsam, Calceolaria, Camellia, Carnation, Cineraria, Dianthus, Fuchsia, Geranium, Gloxinia, Pelargonium, Gladiolus, Lilium, Mimulus, Nasturtium, Pansies, Petunia, Begonia, Tankerville, Clarkia, Roses.

Also, a premium for any one new variety of these or any other plants not mentioned, which the committee appointed for the purpose may deem worthy. We propose premiums—

For best hanging baskets, immortel.
For best basket roses, varieties.
For best basket arranged, miscellaneous.
For best bouquets, first and second best.
For best rustic stand.
For best table design, flowers.
For best show strawberries, not less than five quarts in basket.

THE STATE FAIR.

The Second Annual Fair of the South Carolina State Agricultural and Mechanical Society, will be held in Columbia, S. C., on the 9th, 10th and 11th of November next. The brilliant success of the first fair, last fall, and the well-known zeal, energy and business-like character of the gentlemen who have the matter in hand, furnish a sufficient guarantee that the coming one will be at least equally creditable to the Society and to the State. The Premium List, which is herewith sent out, is an attractive one, and will, no doubt, incite to a lively competition.

OUR ILLUSTRATIONS.

We are pleased to learn that our plan of giving numerous and handsome engravings illustrative of subjects discussed in our columns, is approved by our readers, and universally conceded to add greatly to the interest and value of the articles thus illustrated. We hope to do still better in this line in the future than we have in the past. Our engraving department is under the charge of Mr. W. H. Redding, whose work will speak for itself.

——We call attention to the architectural designs presented in this number. We have the promise of monthly contributions from the same able architect, which we are sure will give great satisfaction.

——One of the most attractive illustrated catalogues of the season is that of C. L. Allen & Co., of Columbia street, Brooklyn. Mr. Allen is a florist from the love of his profession, and has as choice a collection of flowering plants and bulbs, and of flower seeds, as can be found in America.

——Several articles put in type for this number have been necessarily postponed. Even our sixty-four large pages afford too little room for all the good things our valued contributors so generously furnish.

——We are indebted to Mr. H. A. Dreer, seedsman, of 714 Chestnut street, Philadelphia, for a large collection of melon seeds, among which are the Casaba and several other new varieties. We shall take pleasure in testing them in our climate.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Corn is now to be planted, and we hope the planting will be well and largely done, so as to secure enough for home use. We have already given our views of the best mode of planting. Good judgment, however, must be used in applying any general rules. Modes of planting and cultivation must be varied to suit different circumstances. It is well to plant as early as the state of the weather and of the soil will permit, but not to take large risks in the way of frost.

Cotton should be prepared for with all dispatch and in the most thorough manner. After having made ample arrangements for the provision crop, plant just so much cotton as you can manure and cultivate thoroughly, and no more.

Rice will, we hope, be planted more largely than last year. See articles in this and February number.

GARDEN WORK.

The severe freezes of the last part of February will render it necessary to replant a large portion of our gardens; so that the directions given for last month (which see) may in the main be applied to this.

Tomatoes, *Peppers*, *Guinea Squash*, and other tender plants may, if the weather is favorable, be transferred from your hot-beds and cold frames to the open ground, in this latitude, from the middle to the last of this month; but if the cold, raw winds continue, wait till the first of April.

Snap Beans may be planted when settled warm weather can be relied on. See article on

"The American Garden Bean" in this number. Also articles on the *Beet*, *Carrot* and *Parsnip*.

Sweet Potatoes should be bedded early in the month, if not already done, to furnish slips for planting about the first of April.

Peas and *Irish Potatoes* may still be planted.

Tanyah should be planted in some moist but well-drained spot.

Cucumbers, *Squashes*, *Melons* and *Okra* will be in order for planting toward the last of the month. Try the Persian, Casaba and White Japan Melons, if you can get seeds.

Sugar Corn for the first crop should be planted early in the month, but the main planting may be deferred. Common corn planted at the same time will come in later, and bear the heat and drouth better.

THE FLOWER GARDEN.

Annual Flowers should not be neglected. Seeds of most of these should be sown this month. The main requisites for success are to have the soil in a friable condition, so as not to bake, and to sow the seeds the right depth. Very small seeds should be sown on the top, and merely pressed in; larger ones deeper, in proportion to their size.

Evergreen Shrubs and *Climbers* may still be planted, watering them moderately at the time, and afterwards as they may require.

RURAL NOTES AND QUERIES.

GINNING PEELER COTTON.—I can show your correspondent, "Subscriber," how to gin Peeler Cotton *successfully* without injury to the fibre or lint. If "Subscriber" will address me on this subject, I will give him sufficient information to justify him in planting all the Peeler cotton seed he can procure. I give you permission to make this public, if you wish, for the benefit of all those concerned in planting the Peeler Cotton.

JOHN G. LIVINGSTON.

Orange Spring, Marion Co., Fla.

MORE BIG TURNIPS.—Another big turnip comes to us from Anderson County. It was raised by Colonel J. Jamison, by the use of Baugh's Rawbone Phosphate. It weighs twelve pounds. Still another from Mr. J. S. Richardson, Secretary of the Sumter Agricultural Society, and sent in behalf of that organization, weighs fifteen pounds. Where such turnips grow, cotton and corn can be made, and will pay.

APPLE TREE DISEASE.—L. We cannot, from your description, make out just what the disease you refer to may be, but think it is, probably, caused by some species of bark louse. We would advise washing the affected trees with the following composition: Soft soap, two parts; water, eight parts; lime sufficient to bring it to the consistence of a thick whitewash.

GOLDEN PROLIFIC COTTON.—H. D. McLaurin, Brandon, Miss., wishes to procure some Golden Prolific cotton seed. We are sorry not to be able to tell him where he can get it. Holders of the seed should advertise.

DOUBLE DIADEM PINK.—Mr. Dreer's address is 714 Chestnut street, Philadelphia.

"ADVERTISER."—Our editorial and advertising departments are entirely distinct. The editor does not know what is to appear in our advertising pages, and makes it a rule never to refer to advertisements. His "mention," here or elsewhere, is independent and never paid for as advertising.

WILD-GOOSE PLUM.—A writer in the St. Louis *Journal of Agriculture*, (a most excellent paper, by the way,) denounces the Wild-Goose Plum as a very poor variety of the wild or Chickasaw Plum. We shall see when our trees come into bearing.

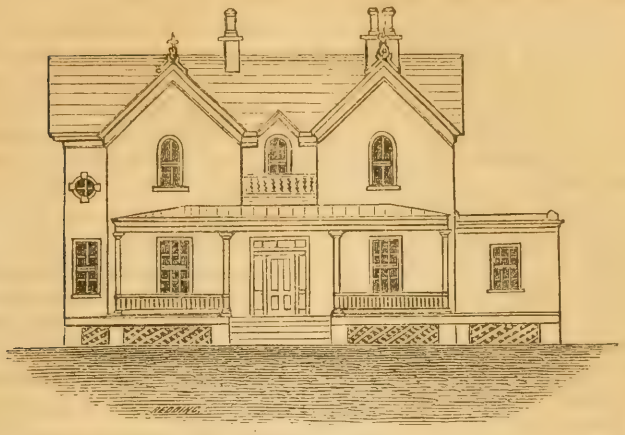
EGYPTIAN MILLET SEED.—Several correspondents want this seed. Who has it for sale?

PREPARING RED PEPPER.—"Sub." The Cayenne pepper of commerce, (often adulterated with red lead and sulphuret of mercury,) is prepared by grinding in mills constructed for the purpose, but we know of no machine for preparing it adapted to family use. Perhaps a *good* coffee mill, screwed up as tightly as possible, would be better than the mortar and pestle.

VENEZUELA COTTON.—Can any one give us trustworthy information about the Venezuela Cotton, introduced and cultivated by Dr. Leitner, of Georgia, and said to be wonderfully early and productive?

POSTPONED.—A large number of queries and answers are necessarily postponed. We hope to supply all omissions in this and other departments in our next.

IMPROVED DOMESTIC ARCHITECTURE.



Front Elevation.

Heretofore the style of building in our State has been of a very uniform character—the square-box style, perfectly symmetrical, without any attempt at variety or to give distinctive character to the building. In large cities, where lots are at the minimum as to size, there must be great uniformity of general plan, only varied as to character and style of finish. But as soon as we get beyond the limits of where land sells by the foot, an infinite variety in styles of building may be introduced, adapted to the surroundings and to the varied taste of proprietors. Much comfort and convenience can be attained without any, or with very little additional expense. Particularly is this the case when we abandon the strictly rectangular style and adopt the irregular.

In the accompanying drawing, the attempt is to show how modern improvements and conveniences, with ample family accommodation, can be attained at comparatively very little expense. This building has been erected in this place, (Columbia, S. C.,) from drawings furnished by me, at a cost not exceeding $3,000, including water and gas pipes to all the rooms where required, with insertion of flues to connect with furnace, by which means it is intended hereafter to heat the house, and also flues to connect with stoves, used temporarily throughout the building. These flues are of terra-cotta ware, 4½ x 13

Side Elevation.

inches, and are built into the partitions between the studding, requiring very little more space than the usual thickness of partition walls.

The drawings, with very few additional words, will make the whole plan comprehensible. The main body of the house contains four rooms on each floor, irregular in size and shape, with a hall extending entirely through the lower floor, within which a stairway ascends to the upper floor, and beneath it another stairway leading to the furnace below. This hall opens at each end on a broad piazza, extending along the entire front and rear.

All the domestic offices being on the same floor with the dining and family bedroom, are easily attainable by the mistress of the house without exposure. An open pantry opens from the dining-room, and within this is a large store-closet, furnished with shelves, and communicating, both by steps and a dumb-waiter, with a dry well beneath. Immediately adjoining is the kitchen, communcated with, by means of a speaking-tube, from the dining-room. Under the cooking-stove, or grate, is an ash-pit, arched over with brickwork, with iron grating let in on centre of cone, into which the ashes falls directly from the stove. Next to the kitchen is the wood-room, with coal-cellar below.

The dimensions of rooms above and below are the same, as will be seen from drawings of respective floors—front rooms each 15 x 18; dining-room, 15 x 19½; chamber behind parlor or sitting-room, 15 x 15; dressing-room, 8 x 10; closets attached, 3 x 4 each; pantry and store-closet each, 8 x 9; kitchen, 12 x 16; wood-room, 6 x 16; hall and piazzas each 9 feet wide. The walls in second story rise 7 feet vertically, and then under the rafters 3 feet more, making central height 10 feet.

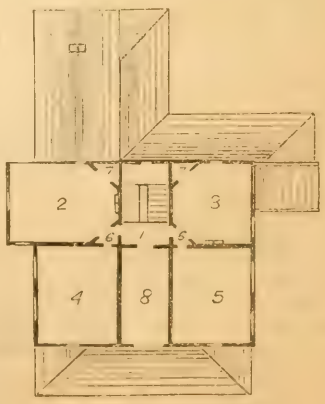
To avoid giving the house a top-heavy appearance, which would have been the result of a single gable, it will be seen that two gables have been projected with a span equal to the width of rooms below, while the space immediately over the front portion of the hall has been left as an open balcony, communicated with by means of a glass door on stair landing.

This furnishes a roomy, comfortable and convenient dwelling, with a pleasing exterior, adapted to any flat or gently rolling rural situation, requiring trees and shrubbery to set it off to advantage.

I neglected to mention, when stating the cost of this building above, as built here, that the contract did not include the inside finish of rooms above, which would add about $300 to the sum stated. Prices would vary, however, according to cost of lumber and labor. Here, lumber is $15 per M., and labor is by no means cheap.

ALEX. Y. LEE,
Columbia, S. C. Arch't & Civ. Eng.

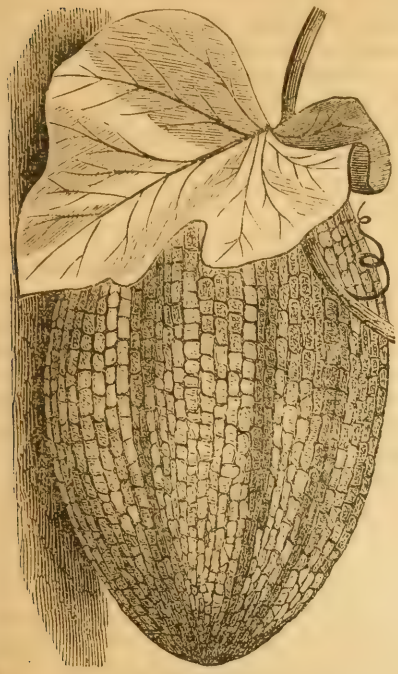
FIRST-FLOOR PLAN.



CHAMBER-FLOOR PLAN.

1st Floor—1. Hall; 2. Sitting-room; 3. Drawing-room; 4. Chamber; 5. Dressing-room; 6. Earth-closet; 7. Earth-closet; 8. Dining-room; 9. Open pantry; 10. Store-closet; 11. Kitchen; 12. Wood-room.
Chamber Floor.—1. Stair landing; 2. Chamber; 3. Chamber; 4. Chamber; 5. Chamber; 6. Lobby; 7. Closet; 8. Balcony.

THE CASABA MELON.



This superior variety of muskmelon, introduced by Mr. Henry A. Dreer, seedsman, of Philadelphia, is so greatly superior in flavor and size to all ordinary melons, that we take pleasure in introducing it to the notice of our readers. The following account of it, written by Professor W. B. Dwight, Principal of "West Point School," is of interest:

"During the earlier years of my life, which I spent in Constantinople, in Turkey, in the midst of the profuse abundance of melons, which used to overstock the markets of the city, we would now and then come across the *Casaba*. It was a luxury not solely for its rarity in that market, but for its own size and excellence. Though as large as the largest watermelons, it was also of really exquisite flavor. I also recall the fact that the cause of its rarity in the Constantinople market, was stated to be due to the fact that it would not grow in excellence, except in the province of Casaba, in Asia Minor, as also to the fact that being excessively sensitive to transportation, it could only occasionally by great care and quiet conveyance be brought to the Bosphorus. I would be most happy to know it, if it can be a fact, that the real Casaba can be acclimated here, or that any of its virtues can be introduced into our melons."

This melon has been grown most successfully the past season in various sections of the United States, and Mr. Dreer has received highly flattering letters from New York State, Maryland, Georgia, New Jersey, and we append an extract from a letter from our own State, (South Carolina,) received by him recently:

"BEAUFORT, S. C., February, 1870.

"Although we think that on the sea islands we raise the finest melons, yet a finer or sweeter than the Casaba has not been found.

"DR. R. RANDOLPH SAMS."

J. M. Phillips, Newtown, Md., writes:

"Every one who ate of them, have pronounced them the finest melon they ever tasted; they weighed from ten to sixteen lbs. each, and suffered less from the drouth than any melons on the farm."

This variety requires no more care than any other variety to grow them to perfection—the seeds are planted in hills of rich sandy soil, six feet apart, leaving three plants to a hill. Those of our readers who may wish to procure the seed, we refer to Mr. Dreer, No. 714 Chestnut street, Philadelphia.

Correspondence.

NOTES BY THE WAY.

Characters not infrequently met in Southern Georgia, are Northern men hunting Southern homes, and South Carolina negroes. The two seem to represent the extremes of the human race; the first are intelligent, energetic, and, withal, a desirable type of immigrant; the other, squalid, thriftless, ignorant and worthless. One of these Northern men, with that peculiar tact of accounting for all things that belongs to the race, said to me: "Those phosphate deposits at Charleston are no special Providences, nor anything of the kind, they are simply the natural deposits of the washings of the Gulf stream"—(a novel idea, to say the least of it.)

One of those self-exiled, Afric-sons of Carolina said to me—"Boss, do dey sell we people way I cum from?" Another novel idea now-a-days. There is the intellectual contrast.

This is a beautiful planting country; lands fertile, gray and mulatto, and as level as the ocean. But, in my judgment, they are cultivated disadvantageously. A force of twenty-five hands denotes a small plantation, and some of the plantations work one hundred, others go as high as three and four hundred hands. Though such mammoth concerns seem to flourish, I think it would take but a little

while to prove from a struck balance sheet, that the net earnings were small, if compared to the aggregated net incomes from smaller plantations. The English Cotton and Land Company, which, as its name implies, is an English company of capitalists who invested in several thousands of acres of lands in this county in 1866, and work about 300 hands, cultivate beautiful lands, buy largely of fertilizers, pay moneyed wages, (as is universally the custom here,) employ an English agent, (who, by the way, is a Presbyterian minister who preaches *without* a salary,) ship their cotton to England direct, and in turn import their supplies, and are, I am sure, sinking money annually. Their average crop is about 1,000 bales. Cost of labor thirteen dollars per month and rations, with, perhaps, three mules to five hands.

Two Georgia gentlemen plant in this vicinity with 400 hands, pay still higher wages and rations, and, perhaps, two mules to three hands. Their average crop is said to be 2,000 bales. Both these places raise their own corn.

Let each reader calculate for himself the cost of running such plantations, add interest as investment, cost of living to the planters who do not reside on the plantation, and taxes, and deduct that amount from the sales of cotton, and report the credit balance.

It might be an interesting question, too, to discuss, whether such estates aided materially the industrial developments of a country, or added anything to her permanent wealth. And especially so with this English company; their cotton is sold in England and their money invested—where? The beautiful lands throughout this section of Georgia are, however, I fear only the beautiful and attractive exterior. Look farther and examine the water—either strongly impregnated limestone or cistern, neither palatable to my taste.

Then the health—of course it's healthy, never saw a place that wasn't; only chills and fevers and an occasional bilious attack. Without reflecting upon the gentler sex, I am told that widows are abundantly numerous in Southwestern Georgia.

D. Wyatt Aiken.

ADDITIONAL NOTICE OF THE AGRICULTURAL SCHOOL OF MOSCOW.

In the January number of this journal, (p. 217,) I gave some account of this institution. The *Annalen der Landwirthschaft*, for December, published at Berlin, has an article on the same subject, contributed by Dr. Wittmack to the Prussian Minister of Agriculture, which supplies numerous interesting details that appear worth presenting to American readers, at a time when information concerning agricultural schools is in great request.

The following statement presents a view of the annual expenditure, and the general objects to which it is applied:

	Rubles.
Director, or president	5,000
Eleven professors	29,700
Seven extraordinary professors	12,600
Permanent member of agricultural board and treasurer	1,500
Secretary of agricultural board	1,200
Farm superintendent	2,000
Farm superintendent's clerk	1,000
Farm overseer	800
Clerk and office expenses	2,400
Physician	900
Veterinary surgeon	600
Hospitals and medicines	2,000
Readers in the church service	400
Church expenses	250
Librarian	1,200
Library and journals	6,000
Prosectors and scientific assistants	3,000
Head gardener	1,200
Assistant gardeners	600
Agricultural museum	2,000
Chemical laboratory	2,000
Meteorological cabinet	1,000
Mineralogical and geological museum, technological museum, with botanical collections	3,000
Greenhouses, orangeries, and for the purchase of plants	3,000
Mechanical workshop	2,200
Agricultural experiments	1,000
Twenty-five scholarships, at 250 rubles each	6,250
Printing programmes, catalogues, tickets, diagrams, etc	700
Medals for competitive examinations	300
For students' excursions in Russia	1,500
For repairs and furniture	9,000
For roads and highways	2,500
For omnibus service to Moscow	1,000
For laborers	14,000
For foresters, laborers and watchmen	10,180
Total	134,980

As a qualification to become a beneficiary of the school, (with the annual stipend of 250 rubles,) it is required, that the student produce a certificate of recommendation from the gymnasium, or other institution at which he obtained his preliminary education.

There is a public boarding-house or refectory, where the students can live, at the rate of six rubles per month, (the dinner including two courses,) or at seven and a half rubles, (with three courses).

Rooms to the number of eighty are furnished by the school, at the rate of four to four and a half rubles per month, inclusive of fire and lights. The rest of the scholars find accommodations in private families.

The hours of attendance are from 9 A. M., to 2 or 3 P. M. The laboratory is open through the whole day. It has sixty-five students, two working together at one table. The construction for ventilation, heating, together with all the arrangements for facili-

tating the ordinary operations of chemical investigation, are said to be of the most approved description; and were contrived under the superintendence of Professor Ilienkoff.

Dr. Wittmack expressed himself much pleased with the other rooms for instruction; and in particular with that, where the lessons in drawing are given. He here notices a simple contrivance in the desks, worthy to be imitated elsewhere. It consists in a slit at top, for receiving into a drawer below, that portion of the sheet which is not in immediate use.

The cabinet of woods, seeds and botanical specimens generally, is pronounced very fine; while the collection of agricultural implements, machines and models, is also highly instructive.

In my first notice, I gave the name of the head director as Jelersnof. Dr. W. states it to be Gellesnoff. Whether there has been a change in the directorship since my visit, or whether the difference in names arises from a typographical error, I am unable to say.

C. U. Shepard, Sr.

THE LATE FAIR.

Mr. Editor: I have just read, with much pleasure and no little profit, the "Proceedings of the Annual Convention of the South Carolina Agricultural and Mechanical Society, held in Columbia, in November," as published by the proprietors of The Rural Carolinian. I venture the assertion, that so much useful and practical information never was before printed in this country on seventy-two consecutive pages. Not a page, scarcely a paragraph, but that contains instructive ideas for the energetic and progressive planter.

Gen. Hagood's address is readable, logical and encouraging. It is of itself a lesson of learning to all young planters under the new regime.

The gentlemen, to whom the various subjects were entrusted to be reported upon, certainly deserve the thanks of the Society for the complete manner in which they have done their duty. All the various subjects are ably handled. New ideas about fertilizers, detailed methods of cultivating cotton, wonderfully successful experiments in corn culture, remarkable and most interesting experience in the breeding of fishes, the reality of sugar-making from the Chinese and African canes, the necessity of using improved agricultural implements, a most comprehensive and able report on the "Necessity of Scientific and Practical Education," some very valuable notes on fencing, a left-handed compliment to the Macon Fair, and last, but not least, the conditions upon which certain premiums are offered through the Agricultural and Mechanical Society to those who will most successfully use the Charleston phosphates, are each and all of them subjects of vital importance to the planter, and are all entertainingly discussed in that little pamphlet. It should be in the hands of every planter in the South, and if properly digested would be more valuable to him than a plantation experience of a decade of years.

Wateree.

THE SALT AND LIME MIXTURE.

D. H. Jacques, Esq.:

Dear Sir: Your correspondent, T. F., of Hinds County, Mississippi, desires to know "what new chemical compounds are formed by the salt and lime mixture." Quick-lime is itself generally a mixture of lime (oxide of calcium) and the carbonate of lime (limestone) or other material taken for burning into quick-lime. In other words, the burning in the kiln is usually incomplete; and some twenty per cent. of the carbonate of lime still retains its carbonic acid. Again brought into exposure to the moisture and carbonic acid contained in the air, it is gradually slacked, and absorbing carbonic acid, the lime is partially changed into the carbonate. The mixture of the carbonate of lime, thus existent or formed in the so-called quick-lime, and of common salt, *i. e.*, the chloride of sodium, can gradually undergo an interchange of elements, by which, on the one hand, there is formed the highly soluble and useful chloride of calcium, on the other, carbonate of soda, the form in which soda is principally present in the ashes of plants.

The chlorine of the thus formed chloride of calcium can undergo an interchange of elements with salts of ammonium in the soil—forming chloride of ammonium and compounds of lime with the acids previously united with ammonium, as for instance the various humus-acids.

Very respectfully,

Charles U. Shepard, Jr., M. D.

Charleston, January 29th, 1870.

LAND WANTED.

D. H. Jacques, Esq.:

Sir: In the December number of The Rural Carolinian, your correspondent, "Subscriber," proposes to donate land to immigrants, and mentions Chinese, Germans, Swedes, etc. I would suggest to the planters of Beaufort that they might get as good citizens in their own State, and propose to "Subscriber" that I will try and raise a company of immigrants, if he and his fellow planters will sell us land on time—say from one to five years.

We will stay on it as long as we live, if we can enjoy health, and if forced to sell we will only sell to whites. And we will have no dealings with the Africans, except to hire

them as laborers, and will only go to law when forced to as defendants.

If "Subscriber" thinks this worthy of notice, he can reply through you, and state the average price of land on these terms. We are all engaged for this year, but if satisfactory arrangements can be made with the planters of Beaufort, we will immigrate next winter. Respectfully, yours,

UP COUNTRY FARMER.

Fort Motte, S. C., Februarg 14, 1870.

Department of Literary Miscellany.

MODEL FARMS.

THE PICTURESQUE IN FARMING,

IN A SERIES OF LETTERS TO THE EDITOR.

Resuming our ramble over the beautiful grounds of Mr. Austin, we come to the duck and geese ponds.

Mr. Austin has a fine flock of Bernicle geese, a highly ornamental bird, and not unpleasant to the palate, either, when roasted. The breast of this bird is covered by a rich black apron of glossy plumage. Flocks of these geese are very rare in this country. The Bernicle goose, although it is sometimes found in the neighborhood of Hudson's Bay, can hardly be called an American bird. English authorities say it resorts to the west shores of Britain and the north of Ireland, and is abundant on the coast of Lancashire, and in the Solway Frith. It is shy and wary. The Bernicle breeds in Iceland, Spitzbergen, Greenland, Lapland, the north of Russia, and in the neighborhood of Hudson's Bay. It is of handsome form, and from the length of the tarsi, stands high on the limbs. Its flesh is excellent. This goose derives its name from a ridiculous story as to its origin. It used to be said that certain trees, resembling willows more particularly, in one of the Orkneys, produced, at the end of their branches, small swelled balls, containing the embryo of a goose suspended by the bill, which when ripe fell off into the sea and took wing. Hence the name "Bernicle goose." Its weight is about five pounds.

There are other varieties in this fine collection. Here I show you a perfect fleet of "Canada" or "wild geese," so well domesticated that they exhibit no migratory or roving desires in the spring-time. They seem to have a perfect sense of the excellence of their quarters, and are satisfied to enjoy their present possessions, rather "than fly to others that they know not of." Among his geese, Mr. Austin has a single specimen of the "Toulouse" variety.

A beautiful flock of "call ducks," as they are named, is especially worthy of our attention. These ducks bear a like relation to full sized birds that bantams do to ordinary fowls. In the collection of our host, you find both the gray and white varieties. They differ from the ordinary varieties in their very small size, and are, as "show birds," the smaller the better. "Call ducks," as their name implies, are remarkable for their loud and continuous quacking in a shrill, high note, which can be heard at a great distance. This renders them admirable as decoy ducks, to allure the wild species to their destruction. In fact, numbers of wild ducks, attracted by Mr. Austin's hospitable arrangements for the comfort of his ducks, squat down in the island coverts in his duck and geese ponds. But these wild intruders are not molested by guns, and, therefore, become quite tame.

Mr. Austin has a flock of Black Cayuga ducks, a bird which derives its name from the lake on which it was first supposed to have been discovered. Of its origin little is known. It is said to have been quite common in the barn-yards in the vicinity of Boston City fifty years ago. Domestication has, as yet, produced no variety in their plumage. Audubon says that the young of this species grow with remarkable rapidity, and like the Mallard, of which they seem to be a variety, acquire the full beauty of their spring plumage before reproduction commences. In the early part of autumn the young affords delicious eating—in the opinion of many persons very much superior to the famous and more celebrated canvas-back duck. This duck has been bred in this country so long that all trace of its origin is lost. Tradition says it is descended from a sort of wild duck that stops in Cayuga Lake and Seneca River, in its passage North and South, fall and spring. It is known as the Big Black Duck, Cayuga Duck or Lake Duck. If well fed they become very fat, and can be readily made so fat that they cannot raise themselves from the ground by means of their wings. So, at least, says the *American Country Gentleman.*

Let us now introduce you to some old acquaintances which you should readily recognize. Here, in this thickly enclosed covert, on the east side of Mr. Austin's premises, he has a flock of "Carolina" ducks, with their wings clipped, so as to prevent them from taking flight to their Southern homes and sympathies.

These beautiful birds are exceedingly shy and inclined to keep shady. They are otherwise known to us as "summer ducks or wood ducks." After being tamed, according to Wilson, this beautiful bird becomes so familiar as to permit one to stroke its back with the hand. Among other gaudy feathers, says Wilson, with which the Indians used to ornament their calumets, or peace-pipes,

was the skin of the head and neck of these wood ducks. This duck is nineteen inches long, and its front, crown and pendent crest are of a rich, glossy bronze green, ending in violet, elegantly marked with a line of pure white running from the upper mandible over the right eye, and with another band of white proceeding from behind the eye, both mingling their long pendent plumes with the green and violet ones, producing a rich effect.

And now for the dove-cotes, occupied by a flock of Calcutta doves, (pigeons,) which have been kept purely white for fifty years. They are home-loving birds. Some of them were not long ago given to a gentleman in Duxbury, the landing-place of the French Atlantic cable. They were kept enclosed for several weeks, but when they were finally let loose, they soared right up into the air, and, taking the Blue Hills of Milton for their objective point, they were quickly back in their cote at West Roxbury, thus reminding us of the carrier-dove of the poetess, Maria del Occidente, who sings:

"And as the dove from far Palmyra flying,
To its own native fount of Antioch springs."

One of Mr. Austin's swans (English Mute) was the first born in New England. One of them took an ærial excursion of some two miles in extent not long ago, and was found exhausted, by a boy, and brought home. The climate of New England is not favorable to the production of this otherwise long-lived bird. Mr. Austin has only raised seven in ten years, though great care has been exercised He has one cygnet stuffed. He procured his Bernicle goose from Cornwall, England, and has succeeded in the difficult task of producing goslings of this bird on his premises.

The woods of "Cedar Hill," the name of our host's domain, suffered very severely from the late cyclone which swept over the North. Several of his fine trees were prostrated, while yonder lusty old pear tree—which still bears its fruit, though so old that the oldest inhabitant remembers it from his boyhood, and even then it was quite as antique in its aspect as at present—escaped, and stands up erect as ever. It is a vegetable patriarch. There are two "Northern Spy" apple trees, one of which, in 1868, yielded six and a half and the other seven barrels of fruit. Yet these exceptional trees are supposed not to flourish well in this region. They are objects of great curiosity in all the neighborhood.

I must not omit the four-footed retainers, the stock, in the collection of "Cedar Hill," though I must needs, from the length of this letter already, abridge my description to come within your limits. There you behold a full-blooded "Kerry cow," imported when two years old, in 1859. She is well worthy the examination of a cattle-fancier. No finer specimen of this breed of Kerry can be found in this country. She is certainly a very beautiful animal to every eye; good for the shambles—but it would be a pity that such a creature should be put to such a use—and good for filling the milk-pail. She is a compact, thorough-bred model cow. She does not give milk, but cream. At any rate, her milk can be made into butter in four minutes and a half churning. Kerry cows are remarkable for their docility, quiet disposition, for the quality and quantity of their milk and the fine grain of their meat, which is fine as venison. They beat even the Jerseys in the matter of butter, their milk being as rich and far more copious. Mr. Austin has also a fine Kerry calf, four months old; also a part Hungarian and Kerry calf; also a Jamestown cow, descended from one brought over from Ireland in the United States relief ship Jamestown, by Captain Forbes. This cow is part Kerry, and is a good milker. She is hornless, being partly of the English no-horn Suffolk breed.

But I must stop. I have endeavored, my dear Ruralist, to give you some idea of one of the most beautiful of all the model farmsteads of this region; yet I fear I have been cataloguing rather than describing. It is very clear to me that within your limits my space would not suffer me to do justice to the symmetrical beauty, the fine landscape, the variety of objects of interest, in value and loveliness, which make "Cedar Hill" a place of most grateful attraction to the eye and mind; and as I gazed, last autumn, upon the exquisite inequalities of ground and situation; its little lakelets, over which glided the frequent fleet of aquatic birds; its rich orchards filled with reddening fruits; its woods of walnut and maple; the lovely expanse of meadow; the smooth upland; the green lawn, with its occasional picturesque boulders, left for their picturesque effect, all bathed and mantled lovelily in the generous sunsets of the autumn, I turned involuntarily to my noble host, and thought of the clustering tastes, sympathies, affections; the fine sensibility, the imaginative art, which were all illustrative of his nature, in the accomplished work of his hands. This, my dear Ruralist, is to be a model farmer, blending the useful and the beautiful; winning all the profitable results of human labor, yet as studious to crown them with all that is beautiful in human art. We must not forget, my good friend, to teach, whenever we can, that though we may dwell in the hut of the cotter, we can bring a vine to trail, with its green and its purple, over the rude porches, and have at least one rosebush growing at the door.

W. Gilmore Simms.

RECIPES.

[An esteemed lady contributor furnishes the following excellent recipes. We hope to receive many more from the same source.—Ed.]

Sweet Wafers.—One large spoonful of butter, one teacup of sugar—rub to a cream; two eggs, a glass of wine or brandy, one teacup of milk, wheat flour sufficient to make a *thin* batter, a little salt—roll before taking off the iron.

Rice Drops.—One large cup of cold, soft-boiled rice, one teaspoonful of butter, one egg, one teacup of warm water, (or milk) one teacup of rice flour, a little salt; drop on tin sheets and bake in a quick oven.

Fried Breads.—One teacup of cold hominy, one egg, one teacup of warm water, one teacup of rice flour, a little salt, a teaspoonful of yeast powder—fry in boiling lard.

The Rural Carolinian is clubbed with the following first-class newspapers, at the rates annexed. Remittances in all cases direct to either office:

	Daily	Tri-Weekly	Weekly
Richmond (Va.) Dispatch	6 50	4 00 semi-w.	$3 00
Augusta Constitutionalist	10 50	7 50	4 00
Savannah News	10 50	6 50	3 00
Macon Telegraph	10 50	5 00 semi-w.	4 00
Columbus Sun	11 00		3 00
Mobile Tribune	11 00		4 00
The Weekly Gleaner, Columbia, S. C.			4 00
Star and Southern Real Estate Advertiser, Marion C. H., S. C.			4 00
Christian Index, Atlanta, Geo.			5 00
Quitman Banner, Quitman, Geo.			4 00
Union Times, Unionville, S. C.			4 00
Gazette, Meridian			4 00
Locomotive, Opelika, Ala		5 50 semi-w.	
The Scooba Spectator, Scooba, Miss.			4 00
Press and Messenger, Eatonton, Geo.			3 00
Banner of the South, Augusta			4 00
"Commonwealth," Marion, Ala.			5 00
Journal, Barnwell, S. C.			3 00
Maryville Republican, Maryville, Tenn			2 75
"Enquirer," Yorkville, S. C.			4 00
"Clarion," Jackson, Miss.			
Shield, West Point, Ga.			3 00
"Examiner," Salisbury, N. C.		6 00	3 00

The following Club Rates are offered by the publishers:

6 Subscriptions..... $10 00
10 " 16 00
20 " 30 00

Money remitted by mail in *registered letters*, postoffice money orders, at our risk.

REVISED RATES OF ADVERTISING.

The attention of advertisers is especially called to the following revised rates of advertising, as after this issue no advertisements will be received at less than these rates:

	1 Mo.	2 Mos.	3 Mos.	6 Mos.	1 Year.	REMARKS.
1 page	$25	$45	$60	$100	$180	Outside back cover
¾ page	20	35	50	80	140	double rates. Inside
1 column	15	28	40	60	100	back cover, 50 per
¾ column	12	22	30	50	90	cent. added to rates.
½ column	10	18	25	40	75	No advertisements
¼ column	5	9	13	24	40	taken for front cover.
⅛ column	3	6	8	12	20	

No editorial notice given to advertisements on any consideration. Nothing paid for inserted in reading matter.

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RURAL CAROLINIAN.

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Agriculture in Education.

The family is the nucleus of society, and society of the State. The universe, in all its agencies, is chiefly concerned in forming the family, for in its bosom are generated the fundamental loves, without which society can neither exist nor subsist. The end of all useful science and industry, and especially of agriculture, is to enable us to found and support the family; the end of all governmental machinery is to protect it; the end of all art is to adorn it; for the final end of the family is to produce, educate and form the human individual into MAN.

Education is derived, through the wisdom in language, both from *educare*, to train up from below or without, and *educere*, to draw down from above or within. The first is man's business; the second, God's, for man only partly owns and controls his being. By day he is himself, and is striving with all the might of his will and intellect to annihilate his being, only Providence interposes, covering him with night; and, like a kind mother, lapping him into unconciousness and infantile weakness, rests, refreshes and restores him, to begin anew with the morning light his war against the gods. His selfishness would contract the universe and absorb it into himself; but Providence strives with ceaseless effort to open his heart, and, by pouring innumerable loves into it, gradually to expand its capacity till its charity embraces the universe. We hear much said about the "importance of education." It is, in truth, the most important of all things—indeed, the chief business of existence. We hear, too, about "finishing one's education;" but, in truth, education is coëval with eternity. It commences in the mother's arms, and does not cease when the good man's dust is laid in the bosom of his mother earth. From filial love, the properly-trained pupil ascends through all the series and grades of affections up to the conjugal. From this, in time, it expands into the paternal, and afterwards into love of the public weal. He then is a fully-

formed, complete man, able to be, and entitled to be called, a citizen. The vital atom ceases at last its spiral whirls, and is established in that place in the body for which it has been educated and fitted in order to the highest benefit of all.

"Let me make the songs of a people," said a wise observer, "and I care not who makes their laws." The song is of the heart, and the inmost nature of man struggles with ceaseless energy to work forth and ultimate itself in organic form and force. A certain great emperor, behind his million bayonets, is afraid of a song. To sound the Marseillaise might shake his throne. The affections by which the heart is *educated* (not perverted) are taught gratuitously by the Great Teacher, for God is Love. But love is blind. It feels, but sees not; neither is it seen, except in works, and so must be provided with intellect, which is its eyes. Hence the necessity of mental education. At a certain period, the pupil, after having acquired in the family those fundamental loves, without which he is deformed, is placed at school. The word school is from the Greek *scholia*, meaning "leisure." Absolute penury enjoys no leisure. Whatever of science, art or governmental operation tends, by diminishing poverty, to afford comfort and leisure, so far renders mental education possible, and aids it. Thus, from the highest to the lowest worker, we are all schoolmasters, as we are all scholars. In another article is to be considered the period from childhood to completed growth, which is the scholastic age, and with special reference to the subject of agricultural schools and agencies of all kinds. After the mental training received in the schoolroom, the pupil enters a higher academy, where he learns civil knowledge, or that relating to the State, and that still higher institution where justice is taught. The wise Edmund Burke has said that kings, lords and commons —in a word, that all the machinery of government is for the purpose of enabling twelve men to sit in a jury. This is true in more than one sense. Judicial organism is permitted by Providence not merely for deciding respecting pounds, shillings and pence. The twelve men are scholars as well as judges, striving to acquire the power which, from frequent exercise, shall become a habit of discriminating between truth and falsehood—between right and wrong. They are being taught for themselves and their people the vital lesson how "to judge, not according to appearances, but to judge just judgment." "Why," asks Divine Wisdom of a sleepy people, who had given up this highest attribute of humanity to their priests, "Why do ye not of yourselves judge what is right?" "Moreover, thou shalt provide out of all the people able men, such as fear God—men of truth, hating covetousness, and let them judge the people." Hence the schoolmasters, to teach the people justice, are the wisest and best men the State can furnish. Knowledge is required for the teaching of scientific things; intelligence, for civil and political things; but only the serenity of age, the clearness of wisdom and the purity of life are fitted to instruct in justice.

If the family generates the State, it is marriage that generates the family. An age in which marriage is desecrated, and divorce patronized by public

sentiment, disbelieves in the Divine Word, having, as it believes, a better evangely of its own. It could not do otherwise, for it is *men* who are capable of marriage. "My people are wise to do evil, but to do good they have no knowledge. I looked, and behold there was not a man!" Millions in Judah, multitudes of learned priests, of the rich and great, and yet not one man among them all. Centuries elapsed to that originally vigorous race till they had a king, who permitted altars to be erected and incense offered to him as a god. The creature was no god—it was not even a man—it was only a fox; this it was and nothing more. "Go," said Divine Wisdom, "go tell that *fox* Herod," thus and thus. Deity never jokes. He speaks plain truths.

The final end of education is to keep the embryo and growing man from becoming through cunning, covetousness and adultry a fox, a wolf, or a satyr, or to convert the beast into a man. This is the truth veiled in the ancient, universal, and misunderstood doctrine of metempsychosis. Man only can marry; beasts are coupled and separate; man only can live in the family and form a State; beasts are caged or herd together. The so-called State grounded in public opinion, which desecrates the sanctity of marriage, is an abiding stench in the nostrils of God, and his handwriting is on its wall.

The brain is composed of myriads of cerebellula or little brains; the tongue of papillæ or little tongues; the stomach of lesser and least stomachs. The twig is but a little tree. By marriage the family is created and the State is composed of innumerable families or little States. The most beautiful type of the State, the country, our mother, that neighbor to be loved next to God, is to be seen in the well-ordered rural household. The home is the capital of this little commonwealth, where agriculture, mechanics and manufactures flourish under a paternal executive, ruling loving and obedient subjects. It has its own legislature ordaining laws in wisdom, its own judiciary deciding in justice. Every day the school is open to eager scholars, and morning and evening about the family altar the little church assembles to worship God, and to draw down (*educere*) its daily supply of charity, faith and hope. By precept and life to sanctify marriage—through precept and work, each in his own sphere, to give comfort, plenty and security to the family, we organize and build up the State in orderly increment from within. In this way, and in this way only can we educate human beings into men fitted for usefulness here and hereafter; for the family is alike the nursery of the commonwealth and the seminary of the heavens.

WM. PINKNEY STARKE.

NOTE.—In my last article for "PERSONAL" persons, read "*personæ;*" for ecliptic, equinoctial.

WHEAT was sold in Chicago recently at ninety-six cents per bushel, the lowest point which it has reached during the last seven years. On the same day corn sold at fifty-nine cents per bushel.

A GERMAN farmer in Mokelumne County, California, feeds his cows on Bartlett pears.

My Plantation.

My Dear Friend: You have requested me to give you a description of my present home and its surroundings, and a detailed account of the organization which exists, the mode of operating, and the results of the "brain work" upon the "bone and muscle" around me.

To understand thoroughly my plans, you must know something of my motives, and of the reasonings which led me to the investment in lands in South Carolina, and to the rather extended operations connected with them.

The results of many years of mercantile business at the South gave me a competent independence; while during these years I was brought closely into connection with cotton and rice planters, and became acquainted with the slave population of the Southern States.

On retiring from business, previous to the late war, I visited Europe and became conversant with the labor system of England, France, Germany and Russia.

In these countries the custom exists, to a great extent, of forcing from the laborer the utmost work for the lowest possible price.

The coal mines, the factories, the vineyards and the "steppes" of Russia, all tell the same story—great and degrading toil, scant pay, little education, poor and insufficient food, and utter moral and physical neglect.

A close examination of the results upon the well-being of the working classes of these countries led to a belief that the relations of labor to capital could be better adjusted, and upon safer and happier principles.

The bonds which hold man to his fellow are self-interest and sympathy. If these are combined between master and servant, or capital and labor, it follows that both will be benefited; capital, by labor, will receive its proper interest; labor, through capital, will be permanently sustained and equitably paid. The man, as a laborer, who is kindly treated through sympathy, and promptly paid fair wages, will rarely desire to dissolve a connection which is to him support and comfort; while the employer will as rarely wish to discharge a faithful, trusty and respectful laborer.

Without saying more on these points, I proceed with my own plans, as influenced by them.

I determined that I would make an experiment in South Carolina, because lands were cheap, labor abundant, climate delicious, and markets for supplies and productions convenient.

You ask me why I came to try negro labor when emigrants could so easily be procured, and when the hordes of China were pouring themselves into our Western country. The reasons for this selection of labor are numerous, and, to my mind, conclusive. I mention only a few of them. The negro, here *now*, is a native, "to the manor born," proof against malarial disease, strong-limbed and easily managed when well treated. We have got to support him by his own work as a laborer, or as a vagrant by ours. They are in families,

they have children, and the labor supply is permanent. They are nominally Christian, and have some ambition to improve their condition. For these reasons, and others not mentioned, I thought negro labor would prove in the end cheaper and better for my purpose than any other, and this decided me in my choice, of which I have never repented.

The first step was to procure land, with privileges of water, wood and fish, suitable for the cultivation of cotton, rice, corn, potatoes, turnips, grapes and other fruits. In this I was eminently successful. Two or three large tracts of pine upland, with several creeks and rivers and much swamp, lying upon the sea-coast, came into market, and I bought, at different times, at public and private sale, some thirty thousand acres, at an average cost of about two dollars and fifty cents per acre. After obtaining titles and possession, a good surveyor and civil engineer was engaged at a fair salary, and with him I went over the whole purchase, finding it admirably adapted to the contemplated purpose.

After the general survey, the whole tract was divided into sections, according to the nature of the soil, the surface of the land, the course of the water runs, and the crops to be planted.

About four miles from the swamp, there was a high ridge of land, parallel with the ocean, of sufficient elevation to give a wide prospect, land and seaward. Upon this was built a commodious house, with little of mere ornament, but with every modern improvement for convenience and comfort. During the survey we had carefully laid out roads, so that every part of the place could be easily reached. I now called to my aid a gentleman of practical experience in rice planting, and also one familiar with the raising of cotton and corn, and other products of a plantation. With their assistance and advice, the whole purchase, as far as it was expedient, was subdivided into lots of about one hundred acres, a map made of each, and a diagram map of the whole, all of which were neatly bound into a folio volume.

At a considerable distance from the lands appropriated to rice culture was found a picturesque spot of about two hundred and fifty acres. This plot of land was divided into lots of an acre, intersected by streets at right angles. Upon one hundred of these, houses of uniform design and finish were erected, each containing four rooms, comfortably arranged for families. At two other places similar plots of land were laid off and built upon for cotton hands, fishermen and mechanics, each family having an acre of ground for their own use as a garden.

At the river there was constructed a wharf, storehouses, threshing mill, gin house and press, with cooper shops and all the accessions which such an establishment demands; the whole plan contemplating the employment of above two thousand persons, when fully up to its working capacity. To accomplish this satisfactorily, it was necessary to have not only shops for mechanics, but a store of merchandise, with a full assortment of supplies needed by laborers and their families. Regular plantation record books, time books and account books with the hands are kept, and on Saturday afternoon, which is a half-holiday, every man is paid in cash by the cashier.

No accounts are kept at the store with the laborers, but as goods are sold them cheap, each buys as he wants, paying cash for his purchases. Few go to any other place for supplies; they are dealt with honestly, and hence their confidence is secured. The week's receipts at the store are turned over to the cashier on Monday morning, and he also receives on deposit and interest any surplus money the men may have. In this way a little additional money, each week, is all that is necessary to enable the cashier to meet his payments.

In the division of labor regard has been had to capacity, intelligence, physical ability and age. The boats and the fishing are under the charge of a capable man who is made responsible, and who supplies the whole plantation with fresh fish, oysters and clams, and is able also to salt large quantities of fish for market. Of late, a new use for the immense quantity of fish in the rivers and creeks has grown up. The mullet and other fat species are boiled, and then pressed for oil, and the refuse sold to manufacturers of phosphate manures, under the name of "scrap," at about twenty dollars a ton, used by them as ammoniacal matter in their mixtures. I use a great deal of manures, both domestic and manipulated from the phosphatic rock of our State, which, when prepared, I have found equal to Peruvian Guano. There is a detachment of ten men with four carts, whose entire duty is to attend to the compost beds and carting of manures. Every dead animal is carried to a prepared place and covered with wood ashes, muck, trash and dry earth, to which a little dilute sulphuric acid is added to dissolve more rapidly the bones. Every particle of offal, wash of the kitchens, night soil, and contents of cesspools are carried to the compost beds, together with great quantities of vegetable matter, humus, decayed tubers and barn-yard manures, so that hundreds of tons of excellent manure is made and carted out upon the land.

After all this heavy expenditure of capital, and labor of mind and body, you will ask me for the results. Bear in mind that I have had in view two or three objects. I wished to invest my capital profitably. In this respect full results have not been obtained. It requires more time fully to develop my plans and to realize their value. My investment is now $200,000, but my preparatory work is nearly done, and all paid for, consequently the ratio of profit will be greater each year until the full capacity of the place is reached.

The rice crop was only forty bushels an acre; it must reach sixty. The cotton lands produced one bale of 400 pounds per acre. I shall not be satisfied until I make them produce three bales to the acre. I am not pleased with the return from the corn lands of only forty bushels; they must produce seventy-five bushels per acre, by the aid of compost and phosphate manures. But with these rather meagre results, on striking the balance the clear net gain was $31,142, not quite 16 per cent. on the capital invested. I feel assured this can be doubled another year. A second motive was to improve the physical condition of the people employed, and determine whether they—the negro population—cannot be made reliable and profitable as laborers. To attain this object, and to obtain an influence over them so that their moral condition could also be benefited, it became necessary to bring into action

the power of sympathy. These people are human beings, in a different *status* from all other people, lying apparently under some peculiar dispensation of Providence—nevertheless, they have souls and minds; they have feeling and affections; and they all need training, watching and teaching. They are quickly touched by kindness, and, in their own way, are grateful. The physical comfort of my laborers is cared for. They have good food, comfortable clothing and regular medical attention by a resident physcian. They have religious services on the Sabbath, and are taught to dress themselves neatly on that day. There is a school for children from 8 to 12 o'clock each day except Saturday. In the evening they are permitted and requested to meet together, to visit each other, to enjoy the music of the violin and banjo, to dance and be cheerful, making themselves as happy as they can.

My experiment looking to profits, as well as to the moral and physical improvement of the many in my employment, has been, so far, a success; and I feel assured it will continue to be, so long as kindness and sympathy are united to firmness, intelligence and justice in management.

Yours, faithfully, A. N. IDEAL.

Old Field Farming.

In 1866, I purchased five acres of old field which had once been good soil—very good corn land. I divided this patch into two parts, one containing three acres, the other two. Running through the three-acre patch were two gullies, which cut off at least from one-half to three-fourths of an acre, and through the two-acre patch one gully, which consumed at least half an acre. This old field had not been worked for twenty years, and stock had been permitted to run over it all of that time. It had a red clay bottom, but the surface soil had been washed entirely off from a considerable part of it, leaving nothing to be seen but the red clay. It was within half a mile of Abbeville C. H., bordering on the "Fair ground." The whole surface was almost as hard as an old beaten road. I intended to plow this field in July and sow it in peas, but the season was very dry, and I could not have broken the soil two inches deep, even with a sharp Gopher plow. The last of August we had a little rain, and I then, by using such a plow, broke it up some three inches deep. My intention was to use a turning plow at first, and then use in the same furrow a subsoil plow, but I could not do so as the land was too hard and dry. I put on this ground about fifteen one-horse wagon loads of old mortar, which we had taken off from our courthouse, and six or eight loads of stable manure, which was very largely mixed with leaves and sawdust, which had been used for bedding horses. I plowed it as best I could, and sowed it in peas, not two-thirds of which came up, as the weather continued very dry. In November I broke up the ground and sowed wheat, and turned the peas in, but could not yet plow deep. And now the result. From the larger field I gathered thirty-one bushels of wheat, and from the smaller upwards of one

hundred dozen of oats, good large bind; and this crop was badly cradled, for it was done by a novice. I am satisfied that if the crop could have been all saved, there would have been, at least, thirty-five bushels of wheat, and one hundred and twenty dozen of oats. Mr. Editor, my family is not large—have but five in number—but I am satisfield that I can furnish my family with bread and meat, feed my horse and cow, and I have almost come to the conclusion to add that I can clothe my family; I know I can do all the rest, from ten acres of just such worn-out old field. What is the use of working one hundred acres of land, when we can raise more on twenty. What is the use of hiring and feeding ten or fifteen hands and a half dozen horses, when we can make just as much with less than one half. The time is to come when one and a half to two bales of cotton will be made on one acre, and thirty to forty bushels of corn will be the result of a single acre; and that man is a philanthropist, a lover of his kind, who will hasten that time. I am willing to take the responsibility of putting my own name to this prediction, as well as statement. All we lack is deep plowing and fertilizers, and two-thirds of the latter can be made at home.

ISAAC BRANCH, M. D.

Planting the Peanut.

Mr. Editor: For the benefit of your correspondent "E," and all other inquirers as to the proper mode of cultivating the peanut, I offer the following directions as to planting, and will, if desirable, give hereafter the manner of cultivating and harvesting the same.

Selection of Seed.—It is highly important that *good* seed be selected. The peanut is a tender plant, and getting a good stand is quite uncertain. It is very important also that a "good stand" be secured at the first, for this plant is a tropical one, and the longer we can make the growing season, the greater will be the yield. The cost of seed, too, is much increased by several plantings. If "E" has his seed to purchase, as I suppose, the best he can do is to select the fullest and heaviest pea, and such as have not been through a heat, or become mouldy. They should have been stored in a dry, airy situation, out of reach of rats and mice. He will have to trust much, however, to the honesty of the seller; for apparently good peas often fail to germinate. It would be well to make a trial of them before planting time, by planting a few. When I come to speak of harvesting this crop, I will give the proper method of saving seed peas.

Preparation of Land.—A light, dry, mellow soil, having lime or some of its congeners as a constituent, should be selected. The land should have been cultivated the previous year in some hoed crop, as corn. If not, it should be cleared of all coarse litter or vegetation by burning or otherwise.

A tenacious or dark soil is not suited, for the reason that the nuts are sold by weight, and any dirt remaining on them will injure the sale; and dark soils

make the pea dark, while bright peas always command the highest price. Having selected the land and cleared it for the plow, break with single team not deeper than three or four inches, as the stems will continue to grow without starting the germ until stopped by compact soil. Of course, the sooner we can get the pea to growing, the greater the yield will be. After breaking, level and pulverize the land with harrow. Then mark off for the rows three feet apart. No need of running deep, as you only want a sign by which to make the beds, which is done by running twice with a turn plow. The use of having a ridge is to have the seed above, or at least not below the surface level, so that water may not cover the pea in case of heavy rains. The ridges are then slightly flattened, and, by any means most convenient to the operator, the field is marked off *across* the beds ready for planting, and the seed should be covered about one and a half or two inches deep, (not more,) having the peas from twelve to twenty inches apart in the row. In a short article I cannot mention every minute particular, but must leave much to the judgment and ingenuity of the planter.

The seed peas must all be shelled by hand, rejecting the small shrivelled ones. Time of planting, in the latitude of Charleston, from 1st to 20th of April.

I cannot now say anything of manuring, but if you have lime in the soil, plant; other fertilizers may be applied to the growing crop.

B. W. JONES.

Accepting the Situation.

"To catch Dame Fortune's golden smile,
Assiduous wait upon her;
And gather gear by every wile
That's justified by honor—
Not for to hide it in a hedge,
Nor for a train attendant;
But for the glorious privilege
Of being *independent*."

We hear a great deal of twattle about the Southern people not "realizing the situation," not "adapting themselves to circumstances," and such stuff. We have long homilies written for our edification, about coming down to our work like true heroes, and illuminated illustrations of an old picture which used to adorn our reading book in boyhood, of a certain wagoner, who, while his wagon was stuck in the mud, was lustily praying to Hercules to help him out.

Now we are inclined to think that the love of work is not universal, or *natural* to all men, and that the people of the North and the West, and even of Puritanical New England, exhibit a decided fondness for an easy chair and making money by short cuts and by their wits, rather than the sweat of the face. If any reliance can be placed upon the statements of the press or statistics, *their* rural population is as anxious to get rid of hard work as ours.

"It is hard to teach an old dog new tricks." Of all classes, the last to recognize the necessity of changing front, and conforming to a new order of things, is the agricultural. The life of the agriculturalist has been one of routine, regular, systematic routine. He had very little intercourse with the world, was but little affected by its outside pressure, and concerned himself very little about anything not connected with his line of business. He was contented and prosperous, secure in the enjoyment of the fruits of his labor, and happy in the bosom of his family. All at once his labor is swept away, his property destroyed, his lands rendered worthless, his country overrun by plundering vagabonds, the halls of legislation usurped by his former slaves and carpet-baggers, and all the offices filled by parasites.

Is it strange that he cannot adapt himself to the new order of things at once, and bring order out of chaos? Is it strange that he is at a loss what to do, or how to do it? Is it not wonderful that he has accomplished what he has?

The patience and energy displayed, and success achieved by the Southern planter under the difficulties he has had to contend with, have no parallel in the history of the past.

There is one idea which seems to have taken possession of the Southern people, and until that is eradicated, there is but little prospect of real prosperity. We mean the devotion of all our energies to the production of cotton. It will not do to be dependent upon the West for our corn, flour and bacon, and upon the North and East for everything we wear, from a hat to a pair of shoes, or use, from a piano to an axe-handle.

All this talk about the value of the cotton crop, the restoration of the South, glorious prosperity and the like, is mere twattle. The rich are growing richer and the poor poorer every day. The money does not stay at home to build up railroads, factories and internal improvements, but it goes North and West for subsistence, gew-gaws and gim-cracks. Nor is it used to pay off old debts and thus strengthen the honesty and independence of the citizen. It is spent recklessly, because a great deal of it is in the hands of a class which never had money to spend before. It is spent freely by others because it is greenbacks, and they feel that there is no security in any investments they can make. Does not any man of common sagacity see what must be the end of borrowing money at from twelve to twenty-five per cent. to grow cotton with unreliable labor, and be dependent upon our oppressors for nearly everything we eat, wear or use?

We do not object to the planting of cotton as the money crop. That is all right—plant but little, cultivate it well, and make it pay. We believe the true policy is to contract the area in cultivation, cultivate more carefully, improve the staple, and compete with the world for the finest quality rather than the greatest quantity. Grow all the corn, wheat, oats and potatoes required for your own consumption, convert all swampy places into meadows, provide yourself with clover lots, barley lots, rye lots, and all means of aiding the corn crib. Try to raise a few more hogs, cattle, sheep, and drop in now and then a horse or mule colt. Encourage your neighbor, who has a knack

of coopering, and have your tubs and buckets made at home. Patronize your own tanneries and shoemakers. Make your own axe-helves and clothes-pins. Encourage your home-wagon and carriage-makers, plough manufacturers and blacksmiths—don't run to the store for everything. Patronize your own magazines and newspapers; pay for them and read them. Take THE RURAL, read it, give it the benefit of your experience, expose humbugs, advocate truth and honesty, and labor, capital, independence, and prosperity will soon follow. R. J. GAGE.

Meadow Woods, January 15, 1870.

Short-comings in Farming.

Buy guano at $100 per ton, have it spread during a windy day, on ground broken from one and a half to two inches deep, get your cotton burnt up by the first trying drouth, and conclude that "guano won't pay."

Turn up thin land deep enough to bury the soil two or three inches, with unameliorated cold subsoil, apply no stimulating manure to "bring out" your puny young plants, and thereupon declare that deep plowing is a humbug.

Subsoil your land without providing drainage for the escape of the water from your subsoil, and abuse book-farming because you are a fool.

Cut one centre drain through a flat of several acres, provide no side drains for cutting off sap water from the land around, and wonder that your cotton will rust so.

Employ a hireling at ten dollars per month, and get out of patience because he don't attend to your business more closely than you do yourself.

Give that hireling a poor mule, poor gear and poorer plow, then feel discouraged because you get such poor plowing done.

Give him a fat mule, good gear and a pointed plow; fail to look after him closely, and see what he will come to.

Make half-way arrangements for feeding and paying your hands, and expect them to work decently.

Always ascribe your want of success to some other cause than the right one.

Feed your mules in an open shelter, open to the depredations of the feathered tribes by day, and the African tribes by night, then wonder why your stock will keep poor.

Spend hundreds of dollars for commercial manures, while your mules waste most of theirs in an open lot, because you can't spare one hundred to fix up a comfortable, roomy stable.

Lending your money at seven per cent., instead of investing it in guano, from reliable parties, putting on land well prepared and well worked, and realizing five times as great a profit.

Tell your neighbors how they ought not to do, then go and do that very way yourself—like the writer SNARL.

Clay Lands—Queries and Suggestions.

A comparison of experiments, or rather of experience, in agricultural matters is, doubtless, useful in aiding its advancement. I write not because I have made new discoveries, or got in advance of any of my neighbors, but because I should like to know the opinions of other men in given cases, and enjoy the aids of science in the solution of difficulties which are likely to occur, and do take place. I am not "a high farmer," though an advocate of "high farming."

I have had a little experience with the plow in several States, and on a variety of soils. My present location is on a plantation of red clay, situated near the great belt of trap-rock running through the up-country of South Carolina. The peculiarity of this red clay formation, as differing from earth of a like appearance in other sections, is the small quantity of silex in its composition, and its similarity, in many respects, to the clay found in the trap-rock belt.

This belt of trap-rock affords soils of very different qualities. Some the best and most durable land in the country; other portions the poorest and most incorrigible soil in the region. A general characteristic is its extreme wetness or dryness, as the season may be. Another feature is its running together when wet, so that a plowing often seems rather to have made it harder than softer. This takes place especially when a hard rain immediately follows a plowing. An interval of two days between the plowing and the rain makes a very great difference in the degree of hardness, when the field is exposed to the action of the sun. These characteristics apply to the red clay lands in the vicinity.

Now, the question arises, would deep winter plowing remedy this difficulty? It has been tried generally with satisfactory results. That this soil abounds in iron is evinced not only by the fact of color but by the abundance of bog-iron ore, which has formed generally in the low flats, so as to constitute an impervious substratum on the pipe clay. I think, also, from a variety of considerations, that there is a deficiency of lime and alkaline substances in these soils. One is the good effect of an application of wood ashes; another the propensity to produce the iron weed and sedge-grass; another the fact that cotton matures badly on these soils—the weed succeeds, but bolls do not open. Now I find that on soils more strictly granitic, and where, of course, there is alkaline matter in greater abundance, that cotton matures finely, though on these granitic soils, when abandoned, the pines spring up as it were spontaneously, and soon restore their fertility. Is this springing up of pines an evidence of a want of lime and alkaline matter in the soil? If so, how do the pines restore the equilibrium or cure the intiseptic properties of the soil? Now the great practical question with me is, what should be applied to these clay lands, in connection with vegetable matter, to increase their fertility? Lime is too remote to justify its transportation in consider-

able quantities in the present state of things. A resort to the fertilizers of higher prices is a very uncertain investment, when the proclivity is strong among your laborers to desert in the heat of the battle.

Another point upon which I would like to see your opinion, and that of your correspondents, is in regard to the most profitable way in which barn-yard manure, or its equivalent, can be applied to stiff clay lands. Is it advisable to place it in a deep trench upon which you intend to bed for cotton or corn? Or would it pay better to partially fill the trench with loose earth before putting on the manuring and bedding? Or would you advise to put the manure in with the seed, upon the supposition that it is well pulverized? I have sometimes found manure, even of the poorest quality, very profitable, and sometimes the better qualities comparatively useless without a very sensible difference in the seasons or manner of application. There is mystery in nature in regard to this as well as some other things. Again, in regard to the application of the coarser kinds of fertilizers, such as straw, corn-stalks or litter from the woods; can they be buried too deep to produce their best effects, or should they be barely under the soil? In other words, if placed on the bottom of a trench one foot deep, a bed thrown on and the seed planted above the straw, stalks, etc., so as not to be touched by the plow in tillage, would the effect be good? Or would the labor be lost for the season?

Very respectfully,

A. B.

The Sweet Potato, and How to Plant It.

The sweet potato, may, we think, be safely pronounced the best of all esculent roots. It is certainly worthy of more attention than it has hitherto received; for, while it has long been an important farm crop at the South, and in some portions of the Middle States, no efforts seem to be made either to introduce improved modes of culture, or to originate new and better varieties. Good as it is, and large as its yield under the present treatment, there can be no doubt but that our crops may be improved both in quantity and in quality.

The sweet potato belongs to the bind-weed family, (*convolvulaceæ,*) and is closely related to the common but always beautiful and never-to-be-despised morning glory. It is indigenous in China, India and the Antilles, and was introduced into Europe long before the Irish potato was known there. It is mentioned by Shakespeare, and is doubtless the vegetable referred to by Falstaff, where he says, "Let the sky rain potatoes."

There are almost as many varieties of the sweet potato as of the Irish potato, and the difference between the various sorts is even greater. In some, the vines are large, in others small; some have angled, others lobed, and others still, pedate leaves. The roots are long, spindle-shaped and oval; white, red purple, and yellow of many shades. The blossom, which seldom

appears except in the yam, is bell-shaped and of a pale, rose-purple color. It resembles the flower of the morning glory. Among the best varieties are the following:

The *Red Bermuda* is, so far as we know, the earliest sort in cultivation. It belongs to the yam family; leaves many-lobed; color red; flesh white; quality, when grown on light, sandy soil, excellent.

The *Nansemond* is another early potato, very popular in Virginia and northward. It is of yellow color, and is good at any stage of its growth, which is not true, to the same extent, of any other variety.

The *Poland*, which I think originated in Virginia, where, however, it may be known by a different name, is an early sort of the very best quality, but not very productive. Color a light yellow; leaves a very light green; grown for an early crop in Florida.

The *Red-White* or *Negro Killer* is a popular kind; very productive and of excellent quality. Roots long; color of the skin, red; flesh white; vines large and red; leaves veined with red.

The *Yellow-Red* is somewhat similar to the foregoing in external appearance, but the flesh is yellow. The flavor is different, and is preferred by some.

The *Brimstone Spanish* is a sulphur-colored sort. Very productive; roots long and large; flesh dry and sweet. It keeps well, and is esteemed in Georgia and South Carolina as one of the best sorts.

The *Red West India*, grown extensively in Florida, is a wonderfully productive variety, and grows to a very large size. Color, a pale red; flesh white; shape oblong, but somewhat irregular; quality, especially if the soil be heavily manured, rather poor.

The *White West India* is equally productive and superior in quality to the red variety. Both are excellent keepers—the best we know.

The *Common Yam*, sometimes called *Pumpkin Yam*, is a universal favorite throughout the South. Leaves, many lobed; vines numerous; roots, large, oblong or globular; color, yellow. Its flavor suggests that of the pumpkin. It is a long keeper and very productive.

The *Hayti Yam*, cultivated in Florida, and to some extent in other parts of the South, has white flesh, and is not so sweet, but more farinaceous than the common yam. It grows to an immense size, especially in the semi-tropical climate of Florida.

The sweet potato affects a sandy soil. It may be grown on a heavy loam, and even on a stiff clay, but the quality will be inferior to that imparted by a sandy soil. It is important that the land be judiciously manured. If a heavy crop be desired, the ground must be well enriched, but strong animal manures in their crude state must always be avoided where a fine quality in the tubers is one of the objects aimed at. Well rotted compost, largely made up of vegetable matter, and with a bushel or two of wood ashes to the load, will be found just the thing. Fair crops are made on light soil, and with no other manure than half-rotted leaves, pine straw and other vegetable matter

scraped up in the forest, and scattered into the furrows upon which the ridges or beds for planting are to be thrown. This manure is hauled and scattered in the winter, and then covered so as to allow it to become well rotted by the time the plant roots require it for the support of vegetation.

The most common mode of manuring land for sweet potatoes in the South, is by "cow-penning" it. The portion of ground set apart for next season's crop is inclosed and made the camping ground of the cattle during the winter, or as long as is necessary. By this means the land gets not only the solid excrements of the cattle and the refuse of their fodder, but the urine also, which seems to be particularly valuable for this crop.

Where the land has not been cow-penned, we scatter broadcast a good coat of well rotted compost, and turn it in with a plow; or, if manure be scarce, and we desire to give the crop the full benefit of what we have, we reserve it to be scattered into drills. The plowing is done several weeks before planting time.

When the slips or "draws" are nearly ready for planting, the land, or such portion of it as is required for the first planting, is thrown up into parallel ridges or beds, three and a half or four feet apart, and when levelled off with a rake or hoe, from six to eight inches high. We think these beds much better, except on low wet land, (which should be avoided if possible,) than high steep, roof-shaped ridges. If the ground has not been manured, drills are made, the manure scattered into them, and the ridges thrown up with the plow as before.

When the plants in your nursery bed are about three inches high and well rooted, it is time to prepare for planting. The ridges or hills being ready, draw the plants carefully from the bed and grout the roots thoroughly in batter composed of equal parts of vegetable mold, fresh cow dung and wood ashes, (which is a good thing to do in planting strawberries and other plants also.) Now let one person drop the plants on the ridges, from twelve to fifteen inches apart, while another, provided with a large dibble, makes deep holes, inserts the plants deeply and presses the earth about the roots, leaving a depression around the plants. A cloudy day, or late in the afternoon, should be chosen for the operation. Unless the ground be very dry, nearly every good plant will live. If it be very dry, a small quantity of water should be poured upon each plant, and a little dry earth drawn about it to prevent baking. In a few days, go over the ground to replant where any slips may have failed.

The time of planting varies, of course, with the latitude and the season. In Florida we commence planting slips in March, and continue to plant at intervals (using cuttings of the vines later in the season) till August; in South Carolina and Georgia, the planting season extends from about the first of April to the first of July.

Some hints on the cultivation of the crop will be given at another time.

Ramie Again.

Editor Rural Carolinian: Your correspondent R., New Orleans, La., in February number, is rather severe on me in regard to my article on Ramie in your December number; but he comes to the fight from behind the stump. I am working and fighting openly for the ramie, because I am fully satisfied that it is a good thing; but I want all who oppose me, or differ from my views, to come out frankly with full names, and discuss the subject fairly.

Allow me to briefly answer the different points your correspondent makes. He asks why no others but those who sell roots make money out of the ramie, notwithstanding it has been in the country for four years?

Answer: Ramie has been here since the spring of 1867, (three years.) Not two thousand were brought out, and not all bought from Dr. Benito Rœzl, a celebrated botanist. The roots were scattered throughout the country. Some few of those who received them paid the proper attention in raising and increasing the plants, and fewer yet were those who troubled themselves to ascertain the value of the fine, strong and silky fibre. I do not know of anybody who made any amount of money in selling roots or plants above their expense and trouble. Who has Mr. R. known to make money? But suppose anybody had made money by the transaction! It would certainly have been just as legitimate a business as to sell Dickson's Cotton seed at $5 a bushel, or the Early Rose potato at $40 a bushel. It is true, I have about a million roots or rather more, and started with eleven roots in the spring, 1867; but Mr. R. is entirely mistaken in supposing that I want to sell them to get rid of them. I sell plants, but make no less preparation to raise fibre for the manufacturers. I can sell one million of plants during this season; but I assure Mr. R. I have more ambition to increase my stock of plants to ten millions before next year. I have cautiously and perseveringly studied the ramie, and am now sure it is a good and profitable thing.

Mr. R. cannot deny that ramie produces an excellent textile. Further, he cannot deny that it grows well here when placed in the proper land. Moreover, he seems to be afraid that it grows *too* well, and cannot be controlled. This is certainly one of the best certificates in favor of the ramie. To keep it within its bounds is the duty of the cultivator. I can prove by my field that it can be kept in bounds, and this as well as sugar-cane, and just as easy. Should I want to use my land for any other purpose, I can plow it out as well as I can break a grass sod.

Now, if Mr. R. will please go to Mr. Emil Lefranc, 48 Conti street, New Orleans, La., he will find the gentleman to whom I alluded as having a small lot sent to Europe, (England,) and as having received by the return of mail an order for twenty tons.

I have taken pains from the beginning to get the true character of the ramie fibre, as it can be produced in this country, fairly established. In July, 1869, I sent samples of fibre to Mr. Charles F. Dennet, Boulogne-sur-mer,

France, one of the best assayists of textiles of the present age, as quoted by the Hon. H. Capron, Commissioner of Agriculture in Washington, and asked his opinion. He says it is superior to China grass, and that the price of raw fibre of China grass is now quoted at seventy pounds sterling per ton—that is, twenty to twenty-five pounds more than it was sold for in 1868.

In 1868 I addressed myself to the largest manufacturers in this line of goods, Joseph Wade & Sons, Bradford, England, who declared my small samples a good quality, and also that the consumption of this textile is on the increase. All manufacturers of this kind of goods in England, France, Germany, Belgium and Switzerland, give one opinion; that is, that a great deal more would be used if a regular supply could be relied on. If Mr. R. has different information, let him publish such, but desist from all insinuations from behind the corner. I ask fair discussions on the basis of progress.

I hope the time is not distant when thousands of tons of ramie fibre will be grown in the sunny South, and when all croakers, who have not sufficient patience to make thorough experiments with it, will be in the rear, and make a bale of cotton on five acres. G. HUNZIKER.

Summit, Miss., Feb. 28, 1870.

Alabama from an Agricultural Point of View.

The geographical position of Alabama is a peculiar one. Wedged in between Georgia, (which is not remarkable, as a State, for its virgin fertility,) on the one side, and Mississippi, the great alluvial State of the South, on the other, Alabama presents a variety of soil, climate and products that are wonderful to an observant traveller. And, if the State be divided latitudinally into quarter sections, it exhibits an agricultural and mineral wealth perhaps no where seen in the same area of territory in the United States.

The northern section is one peculiarly adapted to the growth of the cereals and all Northern fruits, while the climate is perfectly salubrious.

The next section is, so far as I have seen, agriculturally barren, and uninviting to the tiller of the soil, though it is incalculably rich in minerals. Coal, in many parts, can be had for the gathering; iron is superabundant; and marble, as beautiful as the purest Italian, crops out of the earth in many places.

The third section comprises a belt of probably an hundred miles wide, and is *the* cotton-growing region of the South. Within this area the cotton crop of 1869 will, probably, reach 250,000 bales of 500 pounds each, and with proper culture double that amount might just as easily be grown. That it is not grown appears to be attributable to other causes than the sole one of inefficient labor. The fine old mansions and their accompanying clusters of slave-cottages, so frequently seen throughout this section, remind one of better days. But in many places the mansions are deserted while the

cottages are still occupied, and, consequently, in the absence of the directing head, the productive capacity of the soil is annually diminishing. The habit of renting lands to freedmen, or of hiring their labor for wages and entrusting a plantation to an old-fashioned overseer, (now called agent or manager, by way, I suppose, of dignifying the calling,) are two methods quite common in this beautiful country. And both these systems are to my mind impoverishing the land and owner. If the planter invariably lived on his plantation, and as well by precept as example taught the ignorant negro, both parties would be benefited, and the country very materially enriched. These alluvial lands are more generally scratched than plowed, and of their productiveness yields about two hundred pounds of lint cotton per acre. A moiety of science would make the same lands produce double the amount, with the same labor. The muscle of the country is abundant, but its direction is at fault. I have seen in several places in the cane-break and prairie lands of middle Alabama this spring whole gangs of plows bedding cotton land, while the water-furrows of last year's crop were standing several inches deep in water. Upon inquiry, too, I was assured such work was neither injurious to the land nor the future crop. This assurance did not convince me, for I cannot imagine what are the component parts of that soil whose fertility is not injured by working it into a mortar.

Another system is adopted in many of those beautiful plantations which simply tends to sterility. Where the land is sufficiently high to be drained, but level enough to hold the rain-water, the cotton beds are run towards the nearest stream; and thus the gentle declivity of each water-furrow acts as a superficial sewer to carry off gradually, though certainly, all the soluble fertility in the land. Horizontalization and under-draining would act as a perfect preventive to this exhaustion. But who in the South ever saw a renter under-drain or horizontalize?

The southern section of Alabama, off from the water courses, is a pine-barren region, productive at present of only turpentine and rosin. These lands have scarcely any marketable value; and yet I feel warranted in saying, were they cleared up, and manured with the phosphate manures made in Charleston, they would prove to be the most remunerative planting lands in the State. They are to the eye very similar to the lands of Edgefield District, S. C., which have latterly been so revolutionized, both in productiveness and price, by liberal applications of the Charleston phosphates.

By the way, I have been somewhat surprised at the limited knowledge planters here have of the extent and value of those phosphate deposits. I have been asked more than once, "will they last another year?" "has the manure any strength in it?" "do they make enough of it to supply South Carolina?" and similar questions which invariably enable me to procure a subscriber to The Rural.

In Southern Alabama marl deposits are very abundant, and when composted and spread thickly upon the surface produce an almost permanent fertility. A gentleman told me he had applied a heavy coating of marl and

stable manure compost to a lot twenty years ago, and it had produced annually remunerative crops though never manured again. Last year it produced fifty dollars worth of oats to the acre. Near Eufaula there is an immense shell deposit, which crops out on all the creek and the river banks, and of sufficient value to warrant a company's being formed to grind and manipulate it into a fertilizer. By an analysis the shell are found to contain thirty-two per cent. of the phosphate of lime.

Commercial fertilizers are used in all parts of Alabama, and nearly all of them are as yet of Northern manufacture. While in Selma, I saw a steamer land on the bluff 3,600 bags of Patapsco guano, and was assured there was, at the time, nearly three times that amount of other fertilizers then in the city. As freight can be shipped from Charleston to Selma without breaking bulk, our Charleston friends should almost monopolize this trade.

One feature of the labor question is very noticeable everywhere I have been in Alabama, and, perhaps, more so than in Georgia or South Carolina. Every Saturday not only is no work done, but at least half the freedmen seem to think it a religious duty to go to town; and to go afoot is not the custom. On horseback and muleback, in wagons and buggies, ox carts and mule carts, and in or on every possible kind of vehicle or animal, to town they go, and while there spend most of their week's earnings. Not a few drink up more than they make. As a race, they appear to me to be more ignorant and worse clad than the negroes of upper South Carolina, but superior to the low-country negroes of our State. Occasionally very laudable exceptions are encountered. At Fort Valley, in Georgia, I met several negroes who had one, two or three bags of cotton stored, and one fellow had seven. In Montgomery I saw one who had twenty-eight bales stored, and was holding it for a higher price. I advised the worthy fellow to change the investment, for I cannot think the price will advance sufficiently to give a better future net sale. I have been astonished at the amount of cotton everywhere in the country. The crop will certainly approximate 3,000,000 bales.

Nowhere have I seen any material percentage of immigration into the State of Alabama. On the various railroad projections of the State hundreds of hands are at work, and many of them white, but far the greater portion are freedmen, many of whom have been brought from North and South Carolina and Virginia. In many sections I heard of agents having gone on as far as Virginia and brought out hundreds of laborers, in addition to the necessary other hundreds of new laborers. This kind of immigration will not *rapidly* develop the industrial resources of the South. We want intellect as well as muscle. And, in this view of the case, the failures of those Northern men and foreigners who attempted to cultivate cotton after the war, were doubly disastrous to the South. Had they succeeded, they would soon have become identified with the country, and introduced a class of labor that, ere this, would have had our depressed South upon the stilts of fortune. We can but patiently hope for future success. And to secure this, every Southern planter should lend his best energies to the task of making the year 1870, throughout

the South, remarkable for the economy exercised and the thrift enjoyed by our people.

Hobbies and specialities are occasionally met here as elsewhere. I have bought, since I left home, a peck of corn said to be prolific, and of such rapid growth and early maturity, as to make two crops in one season. Also a few bushels of cotton seed, called "Poor Man's Relief," remarkable for the quality of its lint, its productiveness and early maturity. If I live, the readers of THE "RURAL" will hear of these specialities in full next fall.

Jackson, Miss., March 20. D. WYATT AIKEN.

Water as a Fertilizer.

The water and mud of the Nile make the valley of that river a perfect garden. The Egyptian farmer takes a lesson from this, and where the river does not do the work for him, he sets his very primitive pumps into operation, working them by mule, ox or donkey power, and thus produces prodigious crops. Have we not too much neglected this means of enriching our land and feeding our cultivated plants?

The practice of irrigation in Europe is carried out on the greatest scale, and with probably the best results, in the plains of Lombardy and Piedmont. In Lombardy, out of a total area of 6,000,000 acres, upwards of 1,000,000 are artificially irrigated; upwards of 3,000 miles of main or minor canals have been cut in the province, beside a vast extent of small arteries belonging to private individuals. Although some of the main canals are used for the purpose of navigation, they are mainly constructed with a view to a comprehensive plan for irrigating the country.

On a farm of ninety acres at Milan, the water is used eleven times over, from the point where it reaches the farm to where it is parted with to the next neighbor. A late traveller, who visited this farm, says:

"The grass I saw growing was twenty-four days old, and was fit to cut. Seven crops had previously been mown since the beginning of the year. The grass in the irrigated fields is perennial. A good deal of the arable land is susceptible of irrigation. After a wheat crop, cabbages are planted. The wheat crop in one field I saw was cut on June 24th; on July 7th, the cabbages were planted, and on August 24th, (the day I was there,) the ground was completely covered. The cabbages are sent to the Milan market. The land was irrigated once before the cabbages were planted, and once after."

The same writer says:

"When in Spain some years ago, I passed through districts which, in the time of the Moors were most fruitful through being irrigated, but which, through the neglect of the Spaniards, in not maintaining the works left them by the Moors, are now barren wastes."

While we are discussing the manure question, will it not be well to take the water of our streams into the account, and see what use we can make of it?

The Rhae Plant.

Attention is being turned to a new fibre-yielding plant from India, called the rhae. It is described as a kind of withe which grows to the height of six to seven feet, or from four to five feet in a somewhat colder latitude than that named, and in both cases of a diameter one-half to three-quarters of an inch, six inches above the ground. It bears several branches out of the same root, all shooting upward like the main stem, or first shoot, which may, in some cases, merit that name, not only by its central position in the group, but by a slight extra thickness. There are no secondary branches on these; so the rhae plant may be said to consist of several twigs or withes, a kind of broom growing out of one root. The bark, in the lining of which lies the fibre, is, when ripe and fit to cut or pull, of a dark olive color, and when dry and rotted, and fit for the brake, of a deep vandyke brown. It is a test as to its fitness for manufacture, its being hard, dry and brittle. The mode of extracting the fibre from the tannin, or colored astringent portion of the bark, is tedious, and would never be undertaken by the indolent natives, but for the exceeding value of the beautiful silk-like fibre. Its climatic zone is thirty-three degrees on each side of the equator.

The best soil for this plant is a rich, moist bottom, where there will be sufficient moisture, but no danger of flooding. After the land has been well plowed and harrowed, which should be done in April, the seed is sown sparingly in rows, six inches apart, in small drills one inch deep; weed for five weeks, after which the plant will choke down and kill anything that tries to get ahead of it. There can be no doubt that a high state of cultivation would bring forth a better crop.

We understand that this plant is now being experimented with in the gardens of the Department of Agriculture at Washington.

Where to put the Manure.

Manure liberally! Feed your crops well if you desire them to thrive and pay you for your investment of money and labor. These injunctions cannot be too often reiterated; but here a question—an important one, too—comes up. We are asked: "Where shall we put the manure? Shall we spread it on the surface, or plow it under?" This depends upon circumstances; upon the nature of your manure, and the kind of crop you desire to grow. This subject was very ably treated in our November number, by Mr. Edward E. Evans. This article attracted a good deal of attention, and, among other good results, drew out the following excellent letter, which we find in that sterling agricultural journal, the *American Farmer:*

Dear Sir: Your letter and "The Rural Carolinian" were duly received a day or two ago. I have read the article to which you refer, and agree with it, that surface fertilizing is proper and fit for all plants that sustain them-

selves by *surface roots.* Corn, wheat, tobacco and grasses belong to this class of plants; but cotton, clover and peas belong to another class, and have tap-roots as well as surface roots, and require a different application of manures.

Many persons will tell you that these tap-rooted plants send down their taps deep in the earth only to obtain moisture, and thus sustain themselves in times of great drouth. This may be true, but at the same time these taps live to eat plant food, as well as to drink moisture, and when drouth comes to such an extent that the surface roots are incapable and disqualified to get their daily bread, there the old *radix* does the needed work for the whole plant, and hence he who does not prepare his land and fix his plant food deep in the earth, fails to meet the emergency and the necessity.

Individuals are not more sensible and tenacious of the good things of life than are plants.

In your pilgrimage through life you eagerly seek the storehouse where you get the food and the comforts which promote growth and give you ease and pleasure, though you have to make sacrifices to obtain the blessings. And it is so with these tap-rooted plants; a dry season and a fervid sun will make the tap hasten to reach the storehouse, though deep it may be in the earth, to get the food and shelter in which it may luxuriate and grow, and attain an enviable perfection.

Then, I say, put your plant-food for cotton in the earthly storehouse and cover it deeply with well pulverized soil where the sun's rays cannot break through, annoy and steal, and as sure as God has made laws to propitiate the vegetable kingdom, you will as surely attain the end for which you strive.

I lay it down as true, that experimental philosophy is the only sure method of investigating the laws of nature. We can only at best collate facts, and then draw deductions which we call reasoning; but without these facts, obtained from experiment, our agricultural knowledge is futile. We want the actual food for plants, and then we want the media by which this food is conveyed to the vegetable kingdom, and we want to store in this media a sufficiency for growth, maturity and perfection; and nothing but experiments can acquaint us with the character of our soil under our varied and diversified seasons, the character of the food for the particular plant and the depth of our storehouses in which to place the needful food, and the management and cultivation of our soils and crops.

My experiments prove that all tap-roots should have their food placed deep in the earth, beyond the influence of a scorching sun, and where it can be consumed in the hour of stress, when its vitality mostly needs the invigoration in the perfection of its fruits.

The tap-roots, as well as surface-roots, need care and sustenance in infancy more than they can draw from a feeble and exhausted mother earth, and should be fed to give an early and strong growth. But the greatest support must be given when blossoms and fruit are being developed, or else they fall off and wither, and never come to perfection.

Fertilizers placed near the surface of the earth may, and will be injured by the heat of the sun in dry seasons—and in wet seasons they encourage too great a growth of grass and weeds, and require more labor in the cultivation, and do not minister to the tap-root, which requires, as I have said, both food and moisture at a time when they are mostly needed, nay positively required.

The question is often asked, if tap-roots require their food deep in the earth, why did not God make the soil deeper down, and not on the surface? I answer, he *did* make deep soils wherever the tap-roots are indigenous. Witness the cotton plant at home, in Abyssinia, on the deep soils of the Nile,

and in the alluvium of the Burrampooter and Sampoo rivers. Look at our own Mississippi valley, and the great Amazon bottoms.

Experience teaches us that holes dug in the earth four feet apart and two to three feet deep and filled with manures and covered with the clay from these holes, produce cotton in any season without a failure, if the frosts do not come too early. The plant, stimulated in germination and in its infancy in this clayey covering, soon sends its roots and taps into this manure, and the crop is sure.

I am one of the farmers who do not believe in the doctrine of fertilizers leeching into the earth, and in this way its value being lost. I admit that long continued rains may and do take from the manures a lye which is absorbed by the earth, and there digested in this great alembic of nature, and thus goes back to the soil to produce vegetation. If manures and prepared soluble fertilizers were thus leeched, our subsoils would be our most valuable lands, and the country which was most surcharged with water would be our most productive earths, and the subsoils of our bogs would be our transportable guanoes. You perceive this theory is not up to the standard of facts.

My experience of nearly forty years will guide me in the future to bury all manures deep in the earth that we use for summer crops, no matter if the plants be surface or tap-roots, but especially deep for the tap-root plants, and to surface manuring for all winter crops that ripen in the early spring, plowed in as we sow the winter and spring grains.

Very truly and sincerely,

JOHN B. WALLER.

Chemistry in the Rice-Field.

I propose to notice some of the points in which the culture of rice, a plant grown a part of the time in the water, and a part on dry land, differs from that of one grown altogether on the high ground. In the preparation of the soil for either, the preliminary steps are much the same; the producing of such a condition as will promote those decompositions and recompositions necessary to furnish food for the plant. Good drainage, deep turning, thorough pulverization, and the addition of such elements as the plant may require, and not find in sufficient quantity in the soil.

In ordinary high land the soil is not so deep but that it may all be turned by the plow; and the subsoil containing a comparatively small amount of vegetable matter, its mineral components remain inactive, and, while undisturbed, exert little influence on the vegetation above. In the rice-field, where the soil is several feet deep, and generally composed of the same material through its entire depth, the lower portions, though undisturbed, are passing through slow changes, evolving various gases which rise to the surface. These gases, generally the compounds of hydrogen, with carbon, sulphur, and phosphorus, when they reach the upper portion of the soil, are quickly decomposed by the oxygen of the atmosphere, as long as the land is dry and penetrable by air. But when the land is under water, or is ill-drained—

especially if this condition has existed for a length of time—these gases coming in contact with the roots of the plants, produce ill-health, and, if not drawn away, death.

An annual plant should grow continuously until it is complete and fruits; and when it fails to do so it is either for lack of food, or from the presence of poison. In this case both causes exist—the presence of a deleterious gas, and the absence of carbonic acid—and the plant, if in the water growth, ceases to grow, and changes its color to a dirty green, in place of the pale green of healthy rice; if dry, it changes to a yellowish green—it becomes "sick." In the dry growth, better drainage, if practicable, is the remedy for this condition; if not practicable, then the water should be put on; if during the water growth, then washing out the field thoroughly with several tides before the water is kept stationary again. This condition of the soil seems to favor the growth of the "maggot," which many persons accuse of cutting the rice roots, but which I think is innocent of such mischief. When the rice is in this "sick" state, if some of it be taken up carefully with the earth in which it grows, and examined closely, most if not all of the roots will be found dead, or so nearly dead as to be incapable of conveying nourishment to the plant. The free use of water revives the plant, and it puts out new roots nearer the surface, and again begins to grow. Some planters prefer giving it two or three days of sun, instead of simply changing the water. The effect is the same, the expulsion of the noxious gases from the soil.

There is an element of the soil, in some rice lands, which is as injurious to the rice plant, when it exists in any quantity, as the above-mentioned gases. This is alum, which shows its effects under opposite conditions to the former. When the land containing this salt drains well, and is kept dry for a length of time, the constant evaporation from the surface and consequent rising of moisture from below, brings to the surface the alum in solution, and leaves it there, thus causing an accumulation of it among the roots of the young plants, which it soon destroys. This alum should be washed out by several changes of water before planting, or lime should be applied, which decomposes the salt, forming gypsum, and setting free the potash and alumina, thus converting a poison into a fertilizer.

During the sprout flow in open trench rice, there is frequently an accumulation of decaying vegetable matter on the margins, on the lee side of the field where it has been driven by the wind. The rice, in the midst of this, very often dies in the "white sprout," that is, when the sprout is just putting forth, and until it is one-fourth to half an inch long. This is due, probably, to the exclusion of oxygen by other gases, injurious to the germ, formed by the decomposition of this trash, as shown by the water on these places becoming dark-colored and fetid. This occurs generally on wet margins. This is more common during the early part of the planting season, before the sun is hot enough to decompose or dissipate these gases. When not actually killed, the young sprout is so retarded in its growth as to be a week or more behind the other parts of the field. From the same cause, rice planted in land into

which much green vegetable matter has been turned, will much of it die in the white sprout, or when just beginning to germinate, the water becoming impregnated with gases injurious to the germ, which are produced by the decomposition of this green matter. This occurs in lands turned late in spring, after the weeds have grown up in the fields; and is especially troublesome in fields where there is much wampee turned in. The only remedy is a change of water every two or three days during the sprout flow, so as to wash out these gases. The preventive is the application of lime before planting.

During the lay-by flow, the water on the fields seems to become exhausted of its nutritive properties in a few days, and it becomes necessary to renew it frequently. That the plant absorbs nourishment directly from the water, there can be no doubt, through its stalk and leaves; for, later in the season, when the stalk becomes harder, and the leaves are occupied in the elaboration of material for the grain, the plant puts out, from the two or three joints next above the ground, roots branching into fibres delicate as gossamer, which float in the water in search of food, and never attempt to reach the earth. Doubtless both organic and inorganic matter is taken up in considerable quantities in this way,—carbon phosphorus, the alkalis. This changing of the water becomes more necessary in proportion to the exhaustion of the land.

We have some soils in the rice region which are deficient in inorganic, and abound in carbonaceous matter. In these the product is very small, unless assisted by the addition of some fertilizer. As much as seventy or eighty per cent. of this peaty soil is combustible, leaving a very small proportion of ashes. It requires, therefore, a considerable addition of the inorganic constituents of good soil; and when these, together with nitrogenous elements are given, (as in the Peruvian guano,) the productive power is more than doubled. Two hundred pounds of guano has increased the yield of such land from twenty bushels to fifty bushels per acre. The addition of sandy clay (common red clay) is also of great advantage, furnishing silex for the stalk and chaff of the plant and grain, in which such soils are greatly deficient. The best time for applying guano is certainly just before putting on the lay-by flow; by it the rice is put into fine health and vigorous growth at the time it requires it most, just when it is about to "make its head." I would apply the "Soluble Pacific" at the same stage. F.

To Kill Weeds.—Weeds on walks may be kept under by watering the gravel with the following solution: Dissolve two pounds of blue vitriol in an old pan, and then dilute it with six or seven gallons of water; apply this through the fine nose of a watering pot, and it will destroy every sign of vegetation, and after a shower, render the gravel as bright as when just put down. The walk should not be trodden on when newly wetted, as the vitriol will destroy the shoes.

Department of Horticulture and Rural Art.

Raspberries in Central North Carolina.

In the November number of THE CAROLINIAN appears an interesting article on the cultivation of Raspberries, with the intent to disabuse the public mind of the prevailing error that they cannot be grown in the South, and the editor expresses a hope that the Philadelphia, Clarke and Hornet may prove exceptions to the general sad fate of all the red raspberries. The subject is one of interest to horticulturists, and the writer would report his experience, as it is from little scattered facts that we are to gather the truth for future guidance.

Our locality is near the geographical centre of North Carolina, mean annual temperature 60°, and soil a hard, red clay.

In March, 1868, I procured plants of the Philadelphia from the introducer; also of the Clarke. I had already Black Caps, Orange, and Antwerp berries, fruiting successfully, year after year, as will be referred to presently. The new berries were devoted to a special experiment; they were planted in heavy clay loam, pulverized deep, and well enriched with manure. After planting, the ground was lightly mulched with half-decayed leaves.

Being very strong plants they promptly grew off and blossomed abundantly that summer, but I removed all the blooms, except those on a single cane, of each variety, left only in order to examine the fruit. They passed through the summer and winter without the loss of a plant.

Then came the season of 1869, so terribly destructive, on account of the long drouth and intense heat. From the 15th of June to the 6th of September, the ground was not wet by rain, and, indeed, but one or two passing showers fell. No mulching was used, and as the plants were set on the

western side of an open fence, and on a southern slope, the full power of the afternoon sun was completely exercised.

Gardeners in the South well know the hurtful influence of that afternoon sun on tender fruits and flowers. But although they had borne a fair crop of fruit, the plants came safely through, and on examination to-day, January 4th, I find only a few tips killed back an inch or two, and cannot discover that either plant has the advantage over the other in hardiness. This test has entirely satisfied me, for the drouth was so great that our corn crop was a total failure, and nearly all our wells ran dry for the first time in many years.

The Philadelphia proved very prolific, and a handsome berry, but the flavor of the Clarke was greatly superior. One point of value lies in the fact that they come into bearing later than the ordinary black varieties, and retain their fruit long on the canes.

But we find no trouble in securing good results from the Red Antwerps, and the delicate, but delightful Orange berries, by planting these in front of a hedge of the black kinds, set on the north side of a fence built rather open to the sun. The mass of canes and foliage of the Black Caps, furnish, as it hangs over, just the due shade for the tender ones, and we gather fine crops of the red and yellow berries, rich in sweetness and perfume.

Doolittle's Improved deserves every word of praise bestowed by the editor. The only trouble arises from its too rampant growth. Allow it ample light, however,—too much shade will give but little fruit. For general planting there is hardly anything better, and it is so tenacious of life, that plants may be transported by the mails, subject to every sort of neglect, and yet triumph. The otherwise excellent engraving in THE CAROLINIAN hardly does justice to this fine fruit, in point of size, ours being very considerably larger. The objection to its thorns, however, is as well taken, as we usually find ourselves when gathering.

The Raspberry, surely, is a fruit of great value, for all the upland slope of the South, stretching away toward the east and south of our mountain system. It is, probably, also valuable for the regions immediately fringing the sea, where marine influences temper the summer heat, though a long belt of dry territory between the two, of varying width, may be found alien to its development. It is well known that it is somewhat fitful in its tastes, Northern writers telling us that the Antwerps supplied freely to the New York markets by the growers on the Hudson, fail utterly to respond to the efforts of the Jerseymen farther down.

The mild, light red raspberry, indigenous to this country, (*Rubus Strigosus,*) grows in Virginia, the writer having availed himself of its refreshment, some years since, in Louisa and Spottsylvania Counties, at a period when any addition to camp fare was eagerly welcomed. The fruit is pleasantly flavored, but much less firm than that of the Clarke or the Philadelphia.

Raspberries so satisfactorily fill the blank between strawberries, and early apples and peaches, that it is to be hoped that they will receive more atten-

tion. In the words of our editor: "Those who have found them a failure, have, doubtless, either tried the wrong sort, or have badly neglected or abused their plants, and thus thrown discredit upon the culture."

C. B. DENSON.

Pittsboro' Scientific Academy, Pittsboro', Chatham County, N. C.

Truck Farming near Charleston.

The question, "Can truck farming be made to pay?" is often asked, and answered more frequently in accordance with the hopes of the farmer than with his experience and a due regard to actual results would dictate. Without heavy manuring and thorough preparation of soil, to which must be joined skill in cultivation and a knowledge of the crops which will pay, failure is certain.

The expense of putting in cultivation an acre is for the first year, $300; for each successive year, $150 to $200. This estimate is not extravagant, and the production must therefore be proportionably great to warrant so large an outlay. As these crops necessarily come into market in succession, it must be remembered that only a portion of the acreage planted can be realized upon at a time, and current expenses will be found too often to absorb the production, leaving no profit to the farmer. This is an important consideration, and explains one of the most frequent causes of failure. A very few acres have at all times in market gardening to bear all the expenses of the whole, and pay a profit besides. This is the difficulty and reason why so few have been enabled to realize a profit from crops, which in themselves have sold for large sums. Even, therefore, under the most favorable circumstances, it becomes a question if field crops, upon which proper care is bestowed, would not in the end prove more remunerative. The bulky and perishable nature of the products of truck farms add greatly to the expense of cultivation, necessitating the employment of many laborers, animals for hauling, and packages in which to send the produce to market. The markets, too, are liable to glutting, and the variations in prices are extreme. A knowledge of crops is therefore extremely important, and only those should be planted which are largely consumed, and command ready sale. Every effort should also be made to produce them as early as the season will permit.

In selecting seed, choose the earliest and best varieties. With a few exceptions, no seed grown in this vicinity can be used with advantage, particularly for the spring crops. The autumn crops, owing to the extreme heat of the sun, at the time the seed is put in the ground, come better from home-grown seed. The seedsman's bill is a small item. The effort should be to produce the fine article, which will certainly meet with a ready sale.

The soil in the vicinity of Charleston is generally excellent for vegetable culture, and the climate all that can be desired. Two crops certainly, and

often three can be taken from the same ground in the year. The great want on the farms is proper and liberal fertilization; and no person not immediately engaged in the business can form an idea of the immense quantities of manure required. Not only vast quantities of compost and stable manure, but Peruvian guano and bone dust must be applied for each crop, both in spring and autumn. Choice vegetables can only be grown rapidly, and the more rapid the growth the finer will be their appearance, and the more delicate the flavor. Take, for instance, an acre of spring cabbages: one hundred and fifty cartloads of good stable compost, not too new, or twelve hundred pounds of Peruvian guano, or fifteen hundred pounds of bone dust, is required to make anything like a perfect crop. Fifteen thousand heads of Yorks can go upon an acre.

The spring cabbage is, perhaps, the most salable and remunerative crop the truck farmer can cultivate; large quantities are consumed at home, and the interior and Northern markets will take the surplus. The potato, on the other hand, although largely grown at the South for shipment, can only under the most favorable circumstances of season and cultivation, be made to pay. In the first place, the seed is expensive, the planting troublesome, and large supplies of manure must be provided, if a full crop is hoped for. Harvesting, barrelling and hauling add to the outlay. From sixty to eighty barrels to the acre is all which the best lands can produce, and if the crop prove large, from $2 50 to $3 00 per barrel is the best price the farmer can obtain. That a succession crop of corn or other produce can be taken after potatoes is an advantage, and the only one.

In planting late corn after potatoes, care should be taken not to strip the fodder, but allow it to dry upon the stalk. If this is done, the ear will be full heavy, and in every way as good as the early plantings; but, on the contrary, if the fodder be taken off, the ear will be light, rotten, and almost worthless.

The green pea, if early, is very remunerative, but the late varieties and high growing sorts are of little value to the shipper, and will scarcely pay for gathering—a tedious and expensive process, occupying many hands. Early peas and tomatoes go nicely on the same ground, in alternate rows. Remove the peas as soon as possible, and do not wait for gleanings, which at best are hard and worth little. The green pea vines, if cured as fodder, are excellent for stock, and preferred by them to the best hay.

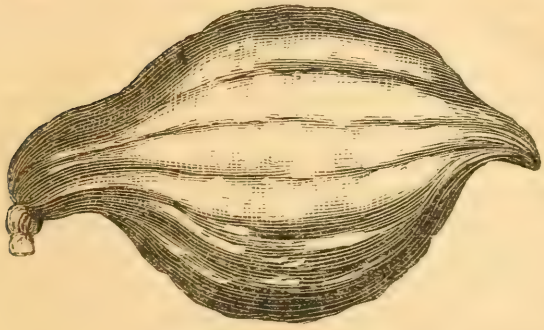
The Early Valentine bean is one of the best, if not the very best crop for shipping purposes. The flat kinds, although early and prolific, are unsalable after the Valentines come to market. No vegetable bears transportation better than the bean. It comes from the crate green and fresh-looking. The Northern markets take immense quantities of them, and the prices are generally remunerative to the last. The tomato is a profitable crop, the home consumption being large; but they are uncertain when shipped, and go usually not in good order. The Round, Smooth is the best variety; prolific and of fair size. The Tilden is a beautiful fruit, but not a good bearer.

The cucumber is a most profitable crop. They are easy to gather, and shippers find them more ready of sale than almost any other garden produce. The White Spine is the only variety to be planted here; they do not turn yellow by keeping, or on the vine, and preserve their freshness for a long time.

A few words on gathering and packing. The potato should be harvested by the plow, gathered in sacks to prevent bruising, and preserve them from exposure to the sun, and be spread for a few days before barrelling in a cool barn, or better yet, upon a brick or tile floor. The summer sun must not shine upon potatoes, if you wish to preserve them. Spread green peas in the shade for a few hours before boxing. They sweat if put immediately in the crates, and are injured in appearance thereby. Beans and tomatoes should also be packed as dry as possible, as all vegetables mildew rapidly.

A. B. ROSE.

How to Grow Squashes.



The Hubbard Squash.

The squash is of tropical origin, and flourishes best in warm climates. It matters comparatively little what is the original character of the soil for the squash, provided it be sufficiently modified and enriched by manure.

Dig holes two feet in diameter and one foot deep, and fill them to within three or four inches of the surface with well digested compost, adding soil sufficient to raise the hills slightly above the general surface, making them, however, a little concave or dishing. Plant ten or twelve seeds in each hill, covering from three-fourths of an inch to an inch in depth. The hills for the dwarfs should be four feet apart, and for the running sorts six or seven. Thin out the plants to two or three to the hill. Keep the patch free from weeds.

Canada Crookneck.

The squash has several insect enemies, from which we must defend it as best we may. The common squash bug, known by his rusty black coat and foul, disgusting smell, is not easily driven off, as he hides himself on the under side of the leaf and defies our dustings of ashes, lime, etc., but a persevering application of the thumb and forefinger—a systematic war of extermination—should be waged against the pest. The same remedy must be applied to the spotted yellow bug or ladybird.

But the most troublesome and destructive pest we

have to deal with in squash culture is the squash vine borer—a small white worm that enters the vine at or near the surface of the ground and soon destroys it. The early planted summer squashes sometimes escape its attacks, but in many gardens it is found impossible to grow a crop of Hubbard or Boston Marrow squashes. The little Canada Crookneck is less liable to the attacks of the borer than any other kind we have tried. Can any of our readers give us a practicable and easy way of protecting squash vines from this worm? Some recommend wood ashes placed about the base of the vine, but we have tried it without effect. Possibly the application was not made in season to prevent the moth (*Ægeria Cucurbitæ*) from depositing its eggs. It is said, also, that if the vines be covered with earth for several inches from the base, that they will be secure against the borer. This we have not tried. It is possible that if this be done before the moth makes its appearance it may prove effectual.

Summer Crookneck.

The best summer squash is the Early Bush Crookneck. The Early Bush Scollop is also a good and well known sort.

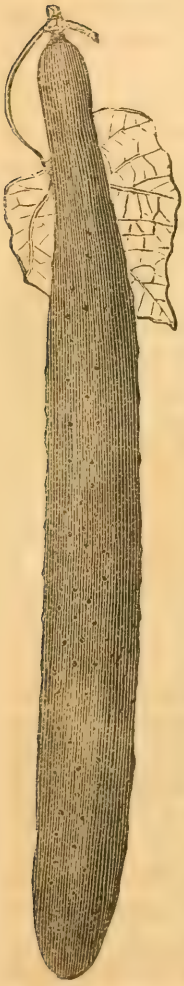
Of the autumn or winter squashes, the Hubbard, the American Turban, the Boston Marrow, (if one can get pure seed,) and the Canada Crookneck, are well-tested and excellent varieties. For all these our climate is the best in the world, and immense crops can be made if the bugs and borers can be circumvented.

Tanyah, (Colocasia Esculenta.)

This plant belongs to the *Arum* family, and is sold by Northern and European florists under the name of Caladium (*C. esculentum*) for a foliage plant, as which it is certainly very effective. It is largely cultivated on the Sandwich Islands and used in making *poi*, a kind of food much esteemed there. It is grown in Charleston and along the coast as a garden vegetable, and much liked by those accustomed to it, but is not generally agreeable to the taste on first acquaintance. It is prepared for the table like the potato, by boiling or baking.

It should be planted in a rich and moist, but well-drained spot, on beds like those prepared for the sweet potato, and from three to four feet apart, the plants to be two feet apart in the rows. The eyes or buds are planted, like Irish potatoes, the small roots being generally selected for the purpose. Plant early in April. Keep the rows free from weeds, earthing up the plants a little from time to time. The crop may be drawn as wanted during the fall and winter.

Cucumber Culture.



Manchester Prize Cucumber.

Origin and Use.—The cucumber is one of the earliest garden products mentioned in history, and was grown in Egypt from the earliest times. It is found growing wild in the East Indies and other warm countries. It possesses little nutritive value, but is grateful to the palate and cooling in its nature, and, though hurtful to weak stomachs, is not unwholesome to the healthy. It should be eaten with vinegar or as a pickle.

Soil and Cultivation.—A light loam is best for the cucumber, but it will grow in almost any soil, and is very easily cultivated. Make excavations for your hills a foot in diameter and fifteen inches deep, at the distance of six feet apart each way. Fill these holes with a rich mixture of well decayed manure and light soil, adding, if convenient, a little ashes, bone-dust, or phosphate of lime, and common salt. Raise the hills a little above the level of the ground, by covering the manure mixture with loam, and make them slightly concave on the top. Plant about the middle of March, or so soon thereafter as the season will admit, and continue to plant during the spring, putting eight or ten seeds in a hill. When the plants have made rough leaves, thin them out to three in a hill. Nipping off the points of the vines to make them branch out will hasten their fruiting. Stir the ground frequently, and keep it free from weeds.

They may be much forwarded by the following method:

Make a hole and put into it a little hot dung; let the hole be under a warm fence. Put six inches deep of fine rich earth on the dung. Sow a parcel of seeds in this earth, and cover at night with a bit of carpet or sail-cloth, having first fixed some hoops over this little bed. Before the plants show the *rough* leaf, plant two into a little flower-pot, and fill as many pots in this way as you please. Have a larger bed ready to put the pots into, and covered with earth, so that the pots may be plunged in the earth up to their tops.

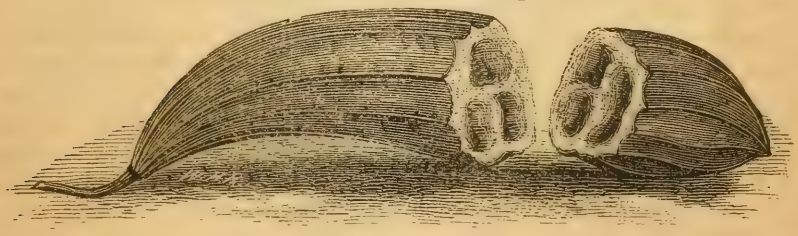
Cover this bed like the last. When the plants have got two rough leaves out, they will begin to make a *shoot* in the middle. Pinch that short off. Let them stand in this bed till your cucumbers *sown in the natural ground come up;* then make some little holes in good, rich land, and, taking a pot at a time, turn out the *ball* and fix it in the hole. These plants will sometimes bear a *month sooner* than those sown in the natural ground.

Cucumbers must be picked as fast as they attain a suitable size, for, if permitted to ripen on the vines, they soon destroy their productiveness.

Early Russian Cucumber.

Varieties.—The earliest variety that we have grown is the *Early Russian.* It has also the merit of being very productive. It is produced in pairs, and is tender, crisp, and fine flavored. It is of small size, and not considered so suitable for the main crop as some others. *Early Cluster* is somewhat later and larger, and is a popular sort. *White Spined* is one of the best varieties, and for the truck farmer, on account of its keeping qualities, the only sort worth growing in this climate for shipping. The English Prize cucumbers, of which we figure one of the best, are generally cultivated under glass, but often succeed in open air culture. The Manchester Prize sometimes attains the length of two feet, and the weight of twelve pounds.

Novel and Curious Vegetables.



The Papanjay.

1. The Papanjay, or Sponge Cucumber, (*Cucumis acutangulus.*) This, like the rest of the cucumber family, is a plant of tropical origin, but readily adapting itself to our climate. It is a creeping vine, with angular, heart-shaped leaves and yellow flowers, growing in clusters. The fruit is a foot or more in length, and from one and a half to three inches in diameter, deeply grooved in the direction of its length, the grooves forming ten longitudinal acute angles. The seeds are black, hard and irregular. When young and tender, the fruit is served raw, like the common cucumber, or cooked like the squash. When ripe it is exceedingly tough and fibrous, and presents the appearance represented in our illustration.

It grows finely here, but is not generally known. It may be cultivated like the common cucumber. We hope to have seeds to distribute next spring, if it prove valuable.

2. The Mango, (*Sechium edulis.*) This is not a novelty in Charleston and vicinity, but is little known elsewhere. It must not be confounded with the mango melon, or with the tropical fruit to which the name mango rightfully belongs. It is a native of the West Indies. It is a vigorous and rapid-growing vine, and requires a trellis or arbor. In this climate, it begins to flower in August, and will continue to blossom and bear till cut off by frost. The fruit is somewhat pear-shaped, and from three to four inches in diameter. It resembles the summer squash in flavor, but is considered more delicate. It is also prepared for the table like the egg plant or Guinea squash, and is excellent as a pickle.

The cultivation of the mango is very simple. In the fall of the year (the later the better) select some of the largest fruit on the vines, and reserve them where they will be secure from frost, but not too warm. If too warm, they will commence to grow, and, perhaps, exhaust themselves. As early in the spring as danger from frost will permit, dig large holes and fill them nearly full of rich compost, which mix well with the earth thrown out. In each of these holes plant one mango. The holes should be not less than ten feet apart. The vines will grow rapidly, and must have a trellis or arbor at once. You will commence getting fruit from them in September. The fruit may be kept all winter by packing it in dry sand, and keeping in a cool place, but out of the reach of frost.

The plant is a perennial, and if the crowns of the roots be protected during the winter by covering with straw or fresh stable manure, they will continue to grow and bear for several years.

3. The Bonnet Gourd, (*Cucurbita ———?*) This plant is said to be found growing wild in the forests of Florida and the West Indies. It is thus described by Mr. Samuel Miller, in the *Germantown Telegraph:*

"I send you a piece of the inside of the bonnet gourd, which I think you will find a very pleasant washing, in the place of a sponge. Although stiff and hard while dry, it becomes soft and pliable as soon as put into warm water. The vine is one of the most unique and beautiful of anything of the kind I ever saw. It will climb a tree, lattice-work, brush, or almost anything; and when its brilliant golden flowers are thickly studded among the dark green glossy foliage, present a grand sight indeed. Its blossoms have a pleasant fragrance, and were in full blow for three months. To cover arbors quickly, I know of nothing to equal it. If the inside proves as valuable as it now appears, and the fruit edible in its green state, used as the vegetable egg, it is certainly worth cultivating. The fruit hangs down some two feet in length, and looks like the club of Hercules. We did not try its eating qualities, wishing to save them for seed."

We have a few seeds to plant, (but none to distribute,) and hope to report upon the plant next fall.

4. The Snake Cucumber, (*Cucumis flexuosus.*) Although generally considered a species of cucumber, this plant seems more closely allied to the musk-melon family. The fruit is slender and flexuous, often folded or coiled serpent-like, and sometimes measuring three feet in length. It is used for pickling, and is said to be excellent when ripe, cooked like the squash. Its cultivation is like that of the musk-melon. Sold by most seedsmen.

A Beautiful Begonia.

Begonia Bolivensis.

The begonias are succulent, soft-wooded plants, with beautiful variegated foliage. They require a greenhouse to grow them to perfection. Our cut represents a comparatively new and very remarkable variety, discovered by Weddel in Bolivia. The flowers are of a brilliant scarlet. Our illustration appeared originally in the London *Florist's Magazine.*

Flowering Annuals.

Clarkia Pulchella.

As this is the month in which, in the larger portion of the Southern States, the more tender annuals of the flower garden are sown, our lady readers may find a brief list of such kinds as are most desirable for general cultivation, (including some perennials that are treated as annuals,) both interesting and useful. We purposely make the list comparatively brief. Those who desire a larger variety can find hundreds more on the seedsmens' catalogues. Those marked with a * are considered particularly desirable.

To enable the grower to judge what position to give each in the bed, we note the average height to which the plant grows. Large seeds, like those of the Sweet Pea, should be planted one and a half or two inches in depth; while very small seeds, those of the portulaca, for instance, must be scattered upon the surface, and merely pressed into the soil. The concentrated fertilizers are excellent for the flower garden, but must be intimately mixed with the soil or composted with well-rotted stable manure.

**Abronia.*—Beautiful plant, with trailing stems and fragrant verbena-like blossoms. ½ foot.

Ageratum, (*Mexicanum.*)—A profuse bloomer. ½ to 1 foot.

**Alyssum.*—Sweet, small, white and fragrant; *A. Wiersbeckii*, yellow and white. 1 foot.

**Aster.*—Chinese, French and German, magnificent flowers, wonderfully improved of late. 1 to 2 feet.

Balloon Vine.—A curious, rapid-growing climber. 5 to 10 feet.

**Balsam.*—Well known. A package of mixed seed gives a good variety. 2 feet.

Calampelis.—A vigorous climber, producing a profusion of orange and scarlet flowers. 10 feet.

**Calliopsis*, or Coreopsis, Dwarf and Tall. A plant with rich-colored flowers of striking beauty. 1 to 2 feet.

Canary-bird Flower.—A beautiful climber. 10 feet.

**Candytuff.*—An old favorite; many varieties. 1 foot.

**Clarkia.*—Free flowering and pretty. Among the best varieties are *C. elegans* and *C. pulchella, fl. pl.*, (double flowering.) 1 to 2 feet.

**Cobœa*, (*C. scandens.*)—A valuable climbing plant of rapid growth. Very desirable. 20 feet.

**Convolvulus.*—An old and common climber, but never to be despised. *C. aureus superbus* is a fine new variety, with yellow flowers. 10 to 20 feet.

Datura, (Trumpet flower.)—Large, spreading, strong-growing plants, and very effective where there is plenty of room. 2 feet.

**Dianthus*, (Pink.)—Fine, showy plants, especially the Double Diadem Pink. 1 foot.

Dolichos, (Hyacinth Bean.)—A rapid-growing climber, allied to our field pea. 8 feet or more.

Euphorbia.—Flowers and foliage beautifully variegated.

**Forget-me-not.*—A well-known favorite. 1 foot.

Fox Glove.—Showy, and good for shady situations. 2 to 3 feet.

**Globe Amaranth.*—Pretty, everlasting flowers, fine for winter bouquets. 1½ feet.

Hibiscus.—Showy and effective among shrubbery. *C. Africanus* and *C. coccineus* are among the best varieties. 1 to 3 feet.

Larkspur.—Well known. 2 feet.

Loasa.—An interesting, rapid-growing climber.

**Lophosphermum, (scandens.)*—A fine, free-growing climber—one of the best. 10 feet.

Malope, (*M. grandiflora* is best.)—Fine, free-flowering plants. 3 feet.

**Martynia.*—Useful as well as ornamental, the pods being used for pickling. 2 feet.

Marvel of Peru.—(Four-o'clock.)

Nemophila.—Will do well in shady situations.

Nigella, (Love in a Mist.)—Curious and pretty. 1 foot.

**Peas, Sweet.*—Valuable as screens or garden hedges; grow 6 feet high; require a trellis.

**Petunia.*—Well known, and much admired.

**Phlox Drumondii.*—Indispensable in every garden; many varieties. 2 to 3 feet.

Poppy—Well known.

Portulaca.—A well-known little plant, with brilliant flowers. ½ foot.

Rodanthe.—One of the most beautiful of the everlasting flowers. 2 feet.

Ricinus, (Castor-oil Bean.)—Some of the varieties are very ornamental, especially *R. Africanus*, *R. sanguineous* and *R. purpureus*. 6 to 10 feet.

**Scabiosa*, (Mourning Bride.)—Showy and fine for bouquets. 1 to 2 feet.

**Stocks*, (Ten Weeks.)—A universal favorite. 1 to 2 feet.

Sweet Sultan.—Profuse flowering plants, suitable for mixed borders. 2 feet.

Thunbergia.—A profuse flowering twining plant. 4 feet.

**Zinnia.*—A fine free-flowering plant, producing flowers of many colors all the season. *Z. elegans*, mixed seed, will give a variety. 2 feet.

Grape Culture in 1751.

We lately had the pleasure of reading a curious old manuscript work entitled "A Philosophico Historical Hydrogeography of South Carolina, Georgia and East Florida," by William Gerard de Brahm, "Surveyor for the Southern District of North America," in which there are many facts, hints and suggestions which are not without their practical value at the present day. The writer was evidently both a close observer and a clear thinker, and his quaint foreign English lends an additional attraction to his work. We have neither time nor room to copy largely from the book, but some remarks on grape culture are too interesting to remain thus shut up from the world in these time-tinted pages. M. De Brahm says:

"At New Bordeaux, on Long Cane River, a colony of French Protestants, under the care of M. Louis Gervais, have experienced that the grape vine needs no support, neither of sticks nor frames, but prospers by being winded on the ground and piled up in a manner that the vine itself forms a kind of close bower, (or, as the French call it, a *chapèle*,) where under it shades its own ground to retain all the moisture; which also covers and preserves the blossom of the grapes against vernal frosts, and the grapes against the violent scorching summer heat, which, by former methods, when the vine winded on sticks or frames, deprived the soil of its moisture, (the vehiculum of nourishment,) so that the stocks of the grapes withered and consequently shut up the channels of the sap, which, after the next rain, rising found no passage

into the wine berry. They, of course, drop off from their stocks; for which disorder of the vine no remedy could be prescribed in former times; so that New Bordeaux is justly entitled to that merit which must be allowed a great acquisition in the culture of the vine upon the extensive continent of America."

Again, M. De Brahm, speaking of the native grapes of our forests, says:

"What is peculiar to South Carolina and the Southern provinces is, that although vines are met with on high lands and on low lands, yet the vines on high places produce none or few grapes, while the vines on low places are always full of that pleasant fruit; and the more so the nearer they are to the running water; which seems to contradict the general observation and experience of Europe, where only the high lands are recommended for vine culture, which insinuation of Nature in America being postponed to European experience, has, probably, contributed much to the bad success of the industrious, unto the era of New Bordeaux."

Herbaceous Grafting.

A correspondent of the *Country Gentleman* finds the herbaceous graft the most sure for the walnut and other difficult trees. He says:

"The operation must be performed when the subject is in active vegetation. Annexed is a rough sketch of the operation. When the terminal bud of the tree is in an active state of vegetation—perhaps the end of May or beginning of June—make an incision crossing the insertion of the petiole of a leaf in about the same state of vegetation as the scion—the third, fourth or fifth leaf may be selected—stopping in the centre about three-quarters of an inch below the leaf. The scion is the same diameter as the stock, wedge-shaped; is fitted into the slit *f*, bound and covered with grafting paste. About five days after the operation, the eye of the leaf *g* is suppressed; in ten days, rub the eyes from the leaves *d* and *e*, also cut the disk of these leaves, reserving the medium nervure; in twenty days, cut the disk of the upper leaf. By thus gradually suppressing the stock, the sap will flow to the scion, which will, in about a month from the operation, commence growth. I prefer to keep the scion and union enveloped in paper, when the operation is performed on the walnut, taxus, and also resinous subjects, until the suture is perfect.

"*Cecil Co., Md.* N. F. F."

Stock and Natural History Department.

Irish Cattle.

There are two breeds of Irish cattle—the Long Horns and the Middle Horns. The latter, which is the original stock, is also known as the Kerry Breed. This is a very hardy kind of cattle, thriving on scanty fare, and fattening rapidly when well fed. They are noted milkers, and, from being so easily kept, have been called "the poor man's cow." We should be glad to hear from some one who has had experience with this breed in the South.

Our illustration is a portrait of a fine specimen of this breed, imported in 1859, by Arthur W. Austin, Esq., of West Roxbury, Mass., a description of which, it will be recollected, occurs in Mr. Simms' letter on "Model Farms" in our March number.

The Kerry cattle are said to be as remarkable for the fine grain and flavor of their meat as for the richness of their milk.

When horse stables are not properly ventilated nor lighted, it is an excellent plan to make a small window where each horse may thrust out his nose when he is not eating, and breathe pure air.

Choking in Horses.

Last summer I was requested to examine and prescribe for a horse said to be "choked." The horse was suddenly seized with violent paroxysms of coughing, attended and followed by great restlessness, which was evinced in various ways. The peculiar wheezing of the respiration, audible several steps distant, and the back and forward swaying of the body when inspiring and expiring, indicated beyond doubt the distressingly labored character of the breathing. Auscultation over the lungs revealed more plainly the convulsive character of the respiratory function, and a loud and distinct mucous rattling in the air tubes of both sides. Along the track of the wind-pipe and gullet neither compression, auscultation nor percussion detected the presence of any obstruction. Pulse about seventy; mouth and tongue rather pale. He bit greedily at green food offered him, and would drink a gruel of corn meal, which was immediately afterwards discharged through the nostrils in such quantities as to render it certain that none had passed into the stomach. The day after he was taken, he was seen by a professed horse doctor who had bled, clystered and attempted to drench him, without affording any relief. This course of treatment and the lack of water and nourishment for the preceding forty hours had, of course, produced considerable physical exhaustion. The mucous rattling in the air-tubes was due as much to this condition as to the oppressed respiration. The wheezing arising from the latter cause led me to locate the point of obstruction near the mouth of the œsophagus or gullet. Bougies were introduced to dislodge the offending matter, but without the slightest benefit. Death finally closed the scene.

I have been particular in detailing all of the prominent symptoms, principally from the extreme rarity of the case, and for the information of others, as the *post mortem* examination of the entire track of the gullet disclosed no obstruction until it came to the stomach end, which was for eight or ten inches stuffed tightly with a firm and unyielding impaction of ingesta that was difficult to remove even after opening into the tube. Lungs dark-colored; no disease of abdominal viscera.

Failures when carefully examined, sometimes yield more information than apparent successes, which frequently give origin to untenable and speculative dogmas, especially in veterinary practice.

From this case, I think we may readily lay down a rule for the diagnosis of similar mishaps. If, in addition to the symptoms already detailed, a bougie fails to find any obstruction along the upper end of the gullet, and careful compression of this tube, which lies above and behind the whole length of the windpipe, discover no enlargement or induration, it may reasonably be assigned to the stomach end, the intensity and duration of the symptoms indicating the degree of severity. A slight collection of obstructive matter might be removed by the judicious use of a long, flexible and strong bougie, properly prepared and well oiled to prevent injury to the delicate mucous

membrane it has to traverse. No medication is necessary; this simple means will relieve. But in bad cases, like the one under consideration, for instance, with my present experience, I would certainly recommend removal of the mass by means of the knife.

I shall not discuss the proper style of operation, nor elaborate the details. A few plain and concise directions will be sufficient. Some eight inches above the breast commence a free incision of the same length, keeping exactly in the centre or mesial line; dissect around the larynx, and open the œsophagus carefully the length of the external wound, to give plenty of room, having previously secured by ligature any troublesome blood-vessels; remove the foreign matters with the fingers or some suitable instrument; rinse the wound, so as to cleanse it from any particles of the extracted mass; draw the edges of the tubal wound together by sutures or stitches made half an inch apart, tied separately and in such a manner that the knots will be left inside the tube; then close the external wound by a sufficient number of whipped stitches, loosely drawn to allow for swelling, leaving the lower inch open for the escape of purulent matter, and finally give the parts the support of several strips of diachylon adhesive plaster, applied by the aid of heat.

Such an operation is quite formidable, but fully justifiable, inasmuch as it gives the animal a chance for life that it would not otherwise have under such aggravated circumstances.

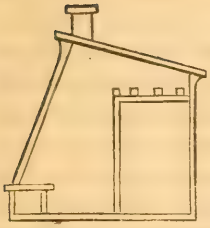
Tie the horse high to prevent self-injury, and feed only on corn-meal gruel, strained, for a week; afterwards, until well, let him have cold mashes of various nutritive matters.

I will add only a few words as to causes and prevention. It seldom or never occurs with young horses, except such as bolt their food. Old horses are more liable, as they swallow their food imperfectly masticated, and with insufficient salivary moisture to make deglutition easy and perfect. Such a mass produces more or less discomfort from its first entrance into the œsophagus, and is liable to become obstructed and produce "choking" at any point, but especially near the stomach end, which is the most fatal. Young horses that bolt their food, and old ones, should have their corn broken for them with plenty of clean, sweet fodder, or hay and salt at will.

GEO. H. WADDELL, M. D.

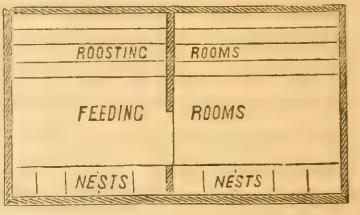
Cooked Food for Stock.—It has been settled by numberless experiments that cooking food for cattle or hogs adds about fifty per cent. to its value. If a man has but a few animals to feed it will cost him but little to get his corn ground, and then thoroughly cook or steam before feeding. If he is a large stock feeder, then he should have his own machinery for grinding corn and cooking it on a scale commensurate with his wants. No outlay on a stock farm will pay better than a grinding and cooking apparatus. Try it on a small scale and be convinced.

Poultry Houses.



No one should attempt to keep fowls without providing them with suitable accommodations to ensure their comfort and health. In our climate these need not be expensive. A very simple house with appropriate accessories in the form of a yard, nests, feeding troughs, water basins, roosts, etc., can all be very cheaply furnished; or they may be more extensive, elaborate, and costly if the proprietor's wants require and his means permit. In either case they should be such as to secure warmth in winter and efficient shelter from storms, without excluding light or air, both of which are essential to the well-being of fowls as well as human beings.

We give a ground plan and section of a simple structure of two rooms. For a few fowls one-half of it, or one room would suffice. Two rooms and two yards are necessary when two breeds are to be kept separate and pure.



Hens always seek to avoid observation when laying, and it is well to gratify this feeling in the construction of their nests. A screen of lattice-work, or a few evergreen boughs properly placed, will secure the required secrecy. There should be two shallow boxes placed in the house, one containing wood ashes or dry sand for a dust-bath, and the other old lime, mortar, crushed bones or powdered shells, and dry, fine gravel. The inside of the fowl-house, including the roosts, should be whitewashed at least twice a year.

The building should, if possible, face to the south or east, for fowls like sunshine. Shade should be secured by means of a shed attached to the house or trees in the yard. A picket fence seven feet in height should inclose whatever ground you intend the fowls to occupy, and this space should include a grass plot for them to feed on. For wintergreen feed sow a little patch of rye in a corner of the yard.

Breaking Oxen.

Mr. Editor: In your last number, you ask for some practical information about the best way to break oxen for farm labor. I have had some experience in this line, and will offer the following, which, although it may not be the *best* that could be given, yet I think it may be of good use to any who are about to add this cheap and valuable draft animal to their stock:

The animals should be castrated while young, say six or nine months old, and should be petted and treated with great kindness from the first, in order

to make them gentle. While petting and handling them, you may, from time to time, teach them the words of command, as "gee," "haw," and "ho," "come here, Lion," (or whatever name,) "go 'long, Lion," "ho, back," etc., making them understand, as far as you can, your meaning. Begin to break them to the use of harness while young. First begin by putting a line upon them, and lead them about. Then yoke with a very light yoke, not for labor, but to familiarize them to its use. After wearing the yoke a few days for them to get used to it, hitch up to a light cart, and teach them to pull it about at a quick, nimble pace, putting on, from time to time, part of a load, that they may get familiar with the weight. They will very soon learn what you are about, and you will have little further trouble with them. You will have them fully broken by the time they attain age and strength for labor.

During the time of breaking, you must not beat them or get out of patience, which is too often the case, and only makes matters worse. When three years old, you may begin work with them, loading lightly and with care at the first. If you have managed properly, you will soon be proud of your oxen, and you will find that a yoke of them are worth as much as the best horse on your farm. Pity it is that they are not in more general use! But we are all awaking from the lethargic sleep of old-fogyism and *old-foolism*, and, before long, I trust, all over the land, the ox will not only know his master, but the master know his ox, and value him, too.

B. W. JONES.

Cottage House, Surry, Va.

Poultry Pentalogue.

A few years ago, somebody in England published a little work which he called "Poultry Pentalogue," in which the whole art of fowl-breeding is summed up in five grand rules:

1. Pure breed;
2. A constant infusion of fresh blood, and a careful avoidance of in-and-in breeding;
3. A varied diet;
4. Equable temperature; and—
5. Strict cleanliness.

Good rules and easily remembered. We commend them to our readers, who may profitably apply them to other stock besides fowls.

Toads in a Garden.—In a lecture on "Insect Enemies," lately delivered by Mr. Treat, before the Vineland Agricultural and Horticultural Society, the usefulness of toads in gardens was forcibly pointed out. The lecturer advised his hearers to carry all the toads they find into the garden, as they devour immense quantities of insects.

Department of Labor and Immigration.

Laboremus.

A LAY OF ENCOURAGEMENT.

I.

"Strike!" as said the Anvil to the Hammer,
Strike! and never let your iron cool!—
Up head, my boy! Speak bravely, do not stammer,
Lest all the world should set you down a fool.
There is no time allowed for shilly-shally,
But seventy years allotted to the best;—
Down with the rock, tear up the fertile valley,
Work out your purpose—leave to God the rest!

II.

You have a purpose—should have—then begin it!
An earnest working purpose is a power,
Which, if you straightway seize upon the minute,
Will make its progress surer every hour!
Build up your fortunes by it—lay them deeply—
Make your foundations sure!—then, day by day,
Raise up your walls—a fortress—never cheaply—
Good purposes demand a large outlay!

III.

Toil, Faith, Devotion, Courage, Resolution!—
These make your capital—these freely spend;—
Once sure of your design, the execution
Needs all that you can give it, to the end!
Oh, boy! man! what a world is in the keeping
Of him who nobly aims and bravely toils!
Speed to the work! We'll all have time for sleeping,
When we have shuffled off these mortal coils!

W. GILMORE SIMMS.

Free Labor and the Cotton Supply.

We are indebted to that veteran industrial and commercial writer, J. N. Cardoza, Esq., for a copy of his elaborate and well considered essay on "The Comparative Value of Hired and Purchased Labor in Producing Cotton," from which we make the following extracts:

THE INEFFICIENCY OF HIRED LABOR.

It will not admit of denial that hired or voluntary labor is inefficient as compared with involuntary or coerced labor. It would, perhaps, be impossible to define exactly the extent of this difference. We would not, perhaps, be far out of the way were we to affirm that the employer who relies on voluntary exertion in the performance of the tasks of the field, suffers a loss of about one-fourth, as compared with him who commands involuntary labor. Now the whole body of workers in the ten Cotton States, as estimated in the

census of 1860, was 3,953,760, of whom not more than one-fourth were cultivators of cotton. As the loss of African life by the war was computed by General Howard, the Superintendent of the Bureau of Freedmen and Abandoned Lands, at twenty-five per cent., it would be reasonable to estimate the loss of efficiency at the same rate.

COSTS OF PRODUCTION AND PRICE OF COTTON.

There is an adjustment between the cost of producing cotton and its market price, which is beyond all artificial regulation. When cotton was at ten to twelve cents per pound (5d. to 6d. in Liverpool) the bale, 400 pounds, was worth from $40 to $50. At that period, (anterior to the civil war) the maintenance of slaves costs, according to the estimate of practical men, $75 per head annually for adults. The rate of wages will soon be $10 per month, if not higher, which is about twice the price of labor and the cost of maintaining a slave before sudden emancipation had so deranged the ordinary relations of the demand, as compared with the supply of labor at the South.

* * * * * * *

If twenty cents for middling upland affords no higher remuneration to the grower than ten cents did when the maintenance of the slave and the price of money [interest] were half of what they are, this consequence must continue until money and labor have become as cheap as they were before the derangement took place to which we have alluded.

DEMAND AND SUPPLY.

The cotton interests of Europe and America alone require an annual supply of over 6,000,000 of bales of cotton to keep their machinery moving—whereas, the actual available production of the world will not amount the present year to 5,000,000 bales.

Granting that East India and the United States may make full average crops of cotton, the most favorable production cannot supply the deficiency.

Say for the crop of the cotton year 1869:

East India, more than last year	1,500,000
Egypt, more than last year	230,000
Turkey, Levant, &c., more than last year	12,500
Brazil, Peru and West Indies, same as last year	707,500
United States, more than last year	2,500,000
All other sources	50,000
Making a liberal estimate of	5,000,000

for the production of the world, while the consumption is over 6,000,000, leaving the apparent deficit in supply in the "raw material" over 1,000,000 bales of cotton, at the end of the present year.

How to supply this deficit is the question, and how to supply it with the needed character of cotton.

PLAN OF RELIEF.

1. We propose, on the supposition that the average quantity of land possessed by planters is five hundred acres, and that one hundred acres are under cultivation, that the surplus or excess be sold or leased, by which means that portion of their land which remains as dead capital will receive an active form.

2. That they make a donation to such immigrants as will settle and cultivate the same.

3. That from the proceeds of the sale of land they loan a sum sufficient to cultivate the tract which is donated, at the current rate in interest, taking a mortgage of the land as security.

4. If the owners prefer to lease, being averse to part with the fee simple, that they lease for five years, giving a quit rent for that period, until the lessee brings the land into a state of preparation, and that the lease be extended to ten years to give the lessees the opportunity of becoming purchasers.

5. That a board of trustees be appointed by the agricultural societies in each district, who shall have the administration and management of the fund raised by the sale of the lands.

6. That it be the duty of the trustees to address circulars to the different classes of European immigrants, urging the advantages of this scheme of immigration, and giving such pecuniary aid to the destitute as would enable them to reach our shores.

The Chinese Problem.

To tempt Chinese immigrants, and introduce them into our Cotton States in sufficient numbers to further a higher prosperity, will require skilful management. Chinese merchants, entitled to esteem in their several companies, have lately returned from a prospecting tour to the Atlantic coast, where universal kindness was bestowed upon them, and unmeasured good feeling manifested toward their people. Pioneer gangs have lately started for places in the Eastern States, where their labor is represented as almost a pressing necessity. These, after a short period in a country where all is new to them, write back to their friends accounts, favorable or otherwise, of the locality, people and occupation. Thus, by degrees, through these means, an immigration will be established. They will come freely when every letter written home unites in confirming the encouraging assertions of those who visit China personally to start them forward. The travelled Chinaman, telling stories of his wanderings, will become a sage in his native district when describing railroads, factories and numerous inventions of civilization.

Foreigners will certainly come from the over-crowded districts to a desirable country, with a population of less than ten persons, and to a State with only two and a half persons to a square mile. The National Constitution makes no discrimination regarding who may come, but affords equal rights to all. If Chinese present themselves, we must admit them. We are bound by treaty to afford them the same protection we accord other nationalities. Great nations cannot afford to be unjust.

Rather than prevent their coming, if it were possible, let us study to understand and become masters of the situation, and direct a system furnishing us Asiatic laborers, so as to advance and elevate all of our present white laboring classes who have within them ability to rise. Their introduction will be gradual, but constant; and, after supplying the large deficit of labor at the South, and furnishing sufficient for the inauguration of new enterprises, it will enable all who are capable to advance and keep pace with the gradual withdrawal of their competitors from menial labor to higher positions.—*Overland Monthly.*

Department of Mining and the Mechanic Arts.

Air-Treatment in Fermentation.

The patented process of R. D'Heurense, called "Air-Treatment," is attracting considerable attention at present, and we are asked to tell our readers what it is. We have no experience in its practical application, and can only state what is claimed for it by the patentee and his agents. We have received from Mr. A. C. Cook, of Covington, Ga., an agent of Mr. D'Heurense, circulars and written statements, from which we condense the following particulars:

"Air-treatment consists in inducting currents of air through the substance under treatment at a suitable temperature, which quickens, improves and perfects all germination and alcoholic or curing fermentation; insures reliable fermentation in substances that otherwise refuse to ferment; purifies, preserves and improves numerous organic fluids, (also water;) and, used in connection with sulphurous acids or other gases, prevents or cures decay in innumerable organic substances.

"The object and effect in every application in fluids is a direct oxidizing action on the nitrogenous albumenous parts, rendering them insoluble, and eliminating them in an oxidized state, while an innocuous condition of the nitrogenous parts in solids is also accomplished. For germination the constant presence of air to every part is as essential as to animal life, and in conjunction with the most favorable temperature, (75 to 80° F.,) and the required moisture, the process is thereby greatly accelerated, perfectly regulated, and rendered independent of climate or season of the year. Mould is impossible.

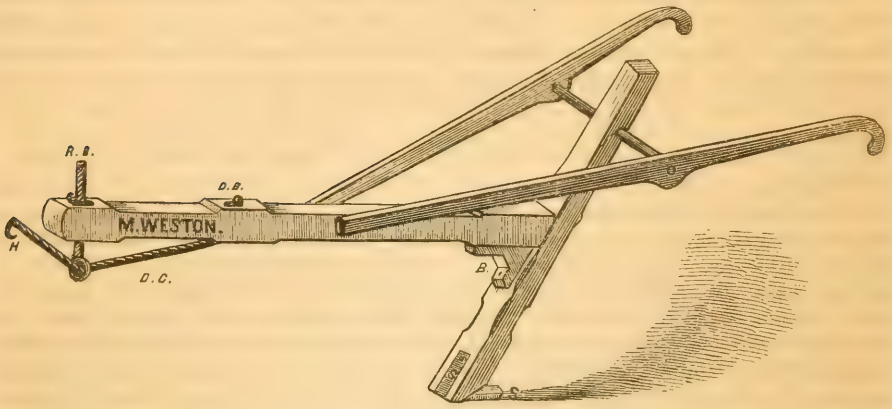
"The American wine-production, which might be worth to the country several hundred millions dollars annually, has remained dormant simply for the want of a sure and simple mode of treatment, by which speedily and economically good, cheap, matured wine could be manufactured in large quantities, to suppress importation and the intemperance which results from the use of distilled liquors.

"Air-treatment meets this want, and brings, it is claimed, within the reach of every-body's means and comprehension the means to work incalculable material and moral benefits to the country we love."

The principle which underlies this process can hardly be called in question. It is, in fact, the same that is involved in digestion, which is nothing more or less than modified fermentation, caused by similar *fungi*. This, like ordinary fermentation, is promoted by supply of oxygen with the healthy saliva and the water we drink; and there is no better remedy for imperfect digestion, and the putrefactive diseases resulting therefrom, than to convey atmospheric oxygen into the stomach and intestines by plenty of exercise, by pure water impregnated with it, or by injecting pure air directly.

In regard to the practical application of the system to wine-making, brewing, sugar and syrup-making, etc., we are not at present sufficiently well informed to express an opinion. We shall embrace the earliest opportunity to investigate the subject. In the meantime, we neither endorse nor condemn it, but leave those who feel sufficient interest in the matter to test it for themselves.

An Improved Plow-Stock.



Mr. Moultrie Weston, of Hopkins' Turn Out, S. C., has invented a plow-stock, of which we give a representation above. He describes it as follows:

S.—Sole.—Let in even with the face of the chip, with the same angle as the brace; legs of angle, six inches; width of sole, one and a quarter inch; thickness, three-quarter inch. If straps are used to fasten on the plows, they should be about three and a half inches deep; if bolts, the same bolts that fasten the sole will fasten the plows, (B.)

R. B.—Regulation Bolt.—This is a ring bolt with a screw from the ring upwards, through which ring the draft-chain works free. It has a loose tail-tap above the beam and one below. By moving this bolt down the plow is raised out of the ground, by moving it up it is buried deeper. It regulates the depth of furrow, adjusts the line of traction to the height of the animal and to the point of resistance.

D. B.—Draft Bolt.—A ring bolt, with loose tail-tap above the beam, to which—

D. C.—Draft Chain—Is attached by a lap ring. This draft-chain passes through the ring of the single-tree and is fastened by the hook (H) at its end. It should be close-twisted.

B.—Brace.—Far superior to the common sword, preventing the choking always complained of by those using the common wooden plow. It is only six inches long, three-quarters of an inch thick, one and a quarter inch wide, three and a half inches solid to point of angle, two and a half inches open, fastened by half inch bolts.

This plow is intended to be set at an angle of thirty degrees, which I have found to answer well.

THE RURAL CAROLINIAN.

VOL. I.] CHARLESTON, S. C., APRIL, 1870. [No. VII.

"*Progress with Prudence, Practice with Science.*"

D. H. JACQUES, EDITOR.

HOW TO GET IMMIGRANTS.

That immigration is desirable is almost universally conceded. We need laborers—intelligent, efficient laborers—but, above all, we need good, substantial citizens, who shall have an interest in the welfare of the country, own property, pay taxes, and help by their votes and by the increased prosperity they would bring, to make taxes light. It is men—white men—who come here with their families, and come to stay, that we want. It matters comparatively little where they come from, provided they are intelligent, industrious, law-abiding people, and become permanent settlers. Europeans and Northerners should be equally welcome. Once established here, their interest and ours will be one, and all can work together to promote the prosperity of the State.

Well, the practical question is, how shall we get such immigrants? It strikes us that we are not at present, at least in South Carolina, taking the right course. We are calling loudly for immigrants, but are not placing before them the proper inducements to come here—that is as a general rule. We appeal to them as *laborers*. We ask them to come here and *work for us for wages*—very low wages too. They can work for other people at home, or if they come to America, they can get far better wages at the West. But the better class of immigrants—the class we want—do not come here to work for wages. Many of them may hire out for a time, and there will always be those among them who will be available as hired laborers, but the primary idea with them all is to become land-owners, and make themselves comfortable, permanent homes; and we shall never get them to come here in large numbers till we recognize this motive and appeal to it in some effectual way.

We have surplus lands in abundance. Our undeveloped resources are immense. Our climate is unsurpassed and greatly superior to that of the West. No country in the world offers to-day so many advantages to the settler as the South; and, whatever prejudiced or politically interested parties may say to the contrary, there is no region where the immigrant, if well disposed, will meet with a warmer welcome or kinder treatment, or find more sympathizing and helpful neighbors.

Do not these facts suggest the means of inducing immigration? We think so.

The immigrants want land. They generally have a little money, but not much. Many of them are not able to buy land, but could put up a log-house and stock a little farm. We have millions of acres good unimproved land that is utterly useless to those who own it. Might we not advantageously offer a portion of this surplus to immigrants on the sole condition that they settle on and improve it. Who does not see that if one-fourth of all our land were disposed of in this way that the remaining three-fourths would soon be worth far more than the whole now is. One may give fifty acres, another a hundred, a third five hundred, (divided into small tracts,) and so on. The aggregate would amount to millions. Then let the fact be published to the world in several languages—made known throughout America and Europe, together with the advantages of soil, climate and social privileges connected with it, and extra facilities afforded for getting to these lands and commencing operations on them. Here would be substantial inducements to these people, and they would not be slow to see them.

All parties would be benefited by such an arrangement. The immigrant would get

a home, the country would get good citizens, we should get the labor we need, (but shall not get by our direct appeals,) for these people would bring with them or draw after them a surplus of bone and muscle adapted to our purposes.

We are aware that this is no new idea. A few have offered to give land to immigrants on certain conditions, and attempts have been made to induce a general movement in this direction. The time had not come. We believe the country is now ripe for it. What we want, at the present time, is concerted, organized and persistent effort. An individual can do little in this matter. The people of the State, acting together, can do everything.

Perhaps no better agencies for initiating the enterprise can be suggested than our County Agricultural Societies. Will they not take hold of the matter at once and in earnest? The convention of such societies to be held in this city, in May, can then take measures, in concert, if practicable, with the existing Immigration Society, to organize a general agency for the State, which will give unity and strength to the movement.

AN IMPROVED GARDEN PLOW.

The introduction of improved implements into the South is as important an element in developing Southern resources as would be the systematizing of our miserably demoralized labor. The scarcity and inefficiency of labor becomes less perceptible as improved tools are substituted for muscle. The intelligent planter, driving his own gang-plow, is equal in quantity, and superior in quality, to four men driving four single plows; the reaper supercedes the grain-cradle, and the seed-drill will do the work of half a dozen men. And wherever an implement is so far improved as to substitute in its use human muscle for horse-power, it certainly should be introduced, both as a labor-saving and money-saving machine.

We have seen no better instrument of this description than the garden-plow, manufactured by Messrs. Marshall & Hord, of Addison, Ohio. It is a light plow-stock, with a flat beam, two and a half feet long. In this beam is an eighteen-inch slot; in this slot works a light wheel, thirty inches in diameter, having its axle at the point of the beam. The front end of the plow-handles is as near the axle of the wheel as possible. The point of the plow-shovel resting on the surface of the ground, the beam of the plow is about level. The plowman, applying sufficient force to sink the shovel into the ground, say three inches, propels the plow with the same ease as if he stood in front of the plow and used a lever fifteen inches long to drag the plow after him, the lever being the radius of the wheel. If some responsible house were to buy the right of this plow for the State, it appears to us they would find no difficulty in introducing it into every garden in South Carolina.

D. W. A.

WHERE CAN THEY BE GOT?

"Where can Chester White and Essex hogs be procured, and at what price?"

"Who has Crevecœur fowls for sale?"

"Where can I get a pair of Dorking fowls?"

"Please tell us the price of a trio of Black Spanish fowls, and of Bramahs, and where they can be procured?"

"Be so kind as to give me the address of some trustworthy breeder of improved stock?"

The foregoing are specimens of the hundreds of questions and requests that reach us every month. We are gratified at receiving them, because they indicate an interest in the improvements we are accustomed to advocate; but to reply to them all by letter would be too heavy a tax upon our time, and to answer through the magazine would involve an amount of gratuitous advertising that we cannot well afford, especially as the parties to whom we should be obliged to refer are mostly established at the North.

Now, the true remedy for this state of things is for responsible parties here to engage in raising stock—hogs, cattle, poultry, etc., for sale, and to *advertise*, so that their ability to supply such wants as our correspondence indicates may be known. Those already engaged in the business here or elsewhere will do well to take the hint, as there is a growing demand for improved stock of all kinds. Our advertising pages are open to all, on reasonable terms.

WOOD ENGRAVING.

Having now fully organized our art department, including drawing on wood as well as engraving, we are enabled to give increased value to our illustrations, presenting correct original representations of improved farm-houses and out-buildings; new and valuable implements and machinery; portraits of fine cattle, hogs, horses, sheep, poultry and other stock; new fruits, vegetables, flowers, etc., etc. We shall also be able to accommodate such of our friends, patrons and subscribers as may want work of this kind handsomely executed, and thus save them the trouble and expense of sending it to the North.

LANCASTER COUNTY.

A subscriber writing from Pleasant Hill, Lancaster County, says:

"We are about organizing an agricultural society in our neighborhood, and I will bring THE RURAL CAROLINIAN prominently before the same as soon as organized."

We are glad to hear of such societies, and would again urge their organization in every county, or in smaller neighborhoods if practicable.

BOOKS WANTED.—The Charleston County Agricultural and Horticultural Society lack volumes III, (1830,) VIII, (1835;) and from XII (1839) to 1845, of the *Southern Agriculturalist*, to complete the set.

Publishers of agricultural and horticultural books will confer a favor by making contributions, and doubtless find it advantageous to themselves to do so. Contributions of books for the Society may be sent to the editor of THE RURAL CAROLINIAN, Charleston, S. C.

THE MOSELEY COTTON.—We are indebted to Mr. Edward J. Judah, of the Quincy (Fla.) *Monitor*, for a specimen of the seed and lint of this new or improved variety, of which he informs us Mr. Moseley made last season twenty-three bales of 500 pounds each, on fourteen and three-fourths acres of pine land lightly manured.

ERRATA.—We regret the occurrence of several mortifying errors in Mr. Smith's excellent article on "Rice Culture on River Lands," in our last number. In the first line, page 337, the word "plowed" should be "flowed;" on page 338, fifteenth line, the word "trench" should be "trunk," *i. e.* "trunk-door;" and on the same page at twenty-third line, there should be no comma after the word "harvest."

—— Do not forget the fruit and flower exhibition to be held in this city next month. Even in this utilitarian age, we can afford to give a little attention even to flowers, for

"A thing of beauty is a joy forever."

—— If "A Farmer," who sends us an article on "How to make Farming Honorable," will give us his name and address, we shall be able to take his paper and proposition into consideration.

—— We are indebted to J. Bruckner, Esq., of New Orleans, La., for some fine root-cuttings of the Ramie plant, which were duly planted and shall be well cared for.

—— Mr. R. B. Canova, Oceola, Fla., and Mr. A. F. Styles, of Jacksonville, Fla., will please accept our thanks for watermelon seeds. Florida cannot be beaten for watermelons.

—— Will some subscriber who has it to spare, be kind enough to send us a small package of Egyptian millet seed. We have formerly grown it, but have lost the seed.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Cotton, of course, now claims the lion's share of the planters time and thought. Well, whatever we do should be well done, especially cotton planting. Labor-saving "Cotton Planters" will be used extensively, especially the Dow Law machine, to hasten the work and improve its quality as well as to save seed. A stand from the first planting is very important, so whether you plant by machine or by hand, let the work be well done. Mellow beds and even rows are essential to good cultivation. A fine-toothed harrow is an excellent thing to run over the tops of the beds. It may have a cross-bar behind the middle with a triangular piece of wood attached, point down, to make a clean, even trench for

the seed. This facilitates the first working very greatly.

Corn should have its first working as soon as the cotton is in, then go back to the cotton and give it the first working. Run close to the corn with a small plow. You may go deep if you like or the land requires it, for if the corn be young, as it should be, there will be no danger of breaking roots. Break out the middles if you have time, or at least run a cultivator or harrow over them to kill the weeds.

Rice.—See articles in this and previous numbers.

Sweet Potatoes should be planted largely everywhere. This crop is a sure one, and helps out wonderfully where corn is short. See article on Potato Planting in another place.

GARDEN WORK.

Omissions in last month's work should now be supplied at once. Keep all parts of the garden free from weeds. They are easily killed when small. The beets, carrots, etc., sown last month, if a stand has been obtained, will require careful weeding and thinning.

Cabbages may still be planted out if you have a low, well-drained, and very rich spot for the purpose. It must be very deeply dug. The Green Glazed is, perhaps, the surest kind for planting at this time. Towards the last of the month cabbage seeds may be sown for the fall and winter crop. Home-grown or Northern seed may be used.

Cauliflowers and Brocoli may be sown toward the last of the month. Sow in a rich seed-bed the same as cabbages. It is somewhat difficult to get them through the summer, but if you succeed you may get fine heads in the fall.

Beets, Carrots, Parsnips, etc., for the main crop, if not got in last month, must be sown at once. See directions in March number.

Tomatoes, Egg-Plant, (Guinea-Squash,) and *Peppers,* from your hot-beds or cold-frames, should now be set out in the open air. Also, sow plenty of seeds for later planting.

Okra for the main crop should now be put in. Rich, low, moist, but well-drained land is best. Only the tall-growing kinds should now be planted.

Snap Beans planted last month, if they have escaped the frost, will need hoeing. Continue to plant every two weeks. See Horticultural Department in March number.

Pole Beans may also be put in as soon as settled warm weather can be relied on. See March number.

Cucumbers, Melons, Squashes, etc., cannot be planted too soon in this region. Where there is danger of frost, a few hills can easily be protected.

Lettuce may still be sown in a cool, well-drained, low spot. Sow where it is to grow, as transplanting imparts a tendency to run up to seed.

Celery, if not sown last month, may be put in now in a cool, low, moist spot. Sow on the surface of the ground, which should be very fine, and press or brush in slightly. Pick the plants out as soon as they are large enough to handle, in a partially shaded spot.

Mangoes and Tanyah should be planted without delay. See Department of Horticulture, etc., in present number.

Sugar Corn may be planted for a succession during the first part of the month, after which flint corn is best.

THE FLOWER GARDEN.

General Note.—As March proved a cold month, the seeds of tender annuals are generally still to be sown. If the weather be suitable and the ground dry, get them in at once; also such bulbs as the lilies, gladiolus, amaryllis, tuberose, etc. See articles in the present number.

FRUIT GARDEN.

Grape vines will throw out extra shoots and suckers, which should be rubbed off at once. Young peach trees should be looked after for the same purpose. Mulch newly-planted trees and vines to keep the ground moist about the roots. This is better than watering.

Strawberry beds must be kept free from runners, if you desire fruit rather than an increase of plants. It is better to *cut* than to pull them off. Keep the beds free from weeds, and put chopped straw, or some other good mulch, around the plants to keep the fruit from the sand.

OUR AGRICULTURAL REPORTS.

Our last month's circular has elicited considerable important information, but as it reached many of our subscribers too late for a seasonable return, we beg those who have not reported to make use of the blank, with the necessary change of date, for the present month, when we can make a fuller and more satisfactory abstract than we are able to do now.

In the meantime, we may state that the tenor of the reports received indicate:

THE SEASON.

1. That the season throughout the South has been backward, and in many parts of the country very wet.

SMALL GRAIN CROPS.

2. Wheat, rye, oats, etc., are generally reported as looking well, but our returns on this point are too meagre to be of much value.

ACREAGE PLANTED.

3. The area planted and in preparation for planting is about the same as last year, on an average, in corn and cotton, so far as can be judged from present returns, but more in the small grains.

PREPARATION OF THE SOIL.

4. Here there is undoubted cause to congratulate the country, and draw hope and encouragement for Southern agriculture. Our correspondents almost universally report *a more thorough preparation of the soil for the coming crop than for any previous one*, though somewhat backward on account of unfavorable weather. Deep plowing and sub-soiling are decidedly on the increase, as is the use of improved implements.

CONCENTRATED FERTILIZERS.

5. The use of commercial manures is reported almost universally as increased largely over last year, especially in South Carolina and Georgia.

LABOR.

6. In regard to the proportion of the freedmen under contract, or actually employed, as compared with last year, our reports do not enable us to judge; but there is probably decrease in numbers, with a somewhat increased efficiency. Immigrant labor is increasing slowly.

Next month we hope, with the help of our correspondents, to make up a more complete report.

RURAL NOTES AND QUERIES.

KEEPING IRISH POTATOES.—Mrs. W. B. R. We know no way in which Irish potatoes can be kept in a good condition through our long hot summers. The best thing to do, so far as we know, to keep them as long as possible, is to spread them in a cool, dry place, (on a brick or tile floor is best,) where they can have light, but where the sun cannot reach them, and sprinkle them with lime. The sprouts must be rubbed off as they appear. The way, however, to have Irish potatoes for winter use, in this climate, is to grow a second or fall crop. Directions for doing this will be given in due time.

WATER RAM.—A. S. G. A ram capable of raising water for your household and for farm purposes will cost, put up, $175—transportation extra.

EVERGREEN GRASS.—S. It will be too late, we presume, to procure it for the present season. We have sown a small quantity, by way of experiment, and hope to report on it in due time.

JAPAN CLOVER.—H. A. G. and others.—Rev. T. W. Moore, Sherrill's Ford, N. C., may perhaps be able to furnish the seed.

CASTOR-OIL BEAN AND BENE.—I would advise no one to cultivate the castor-oil bean unenclosed where there are cattle, for I have had them to eat all of it that was tender enough.

One farmer in Beaufort, being very fond of sweet oil, was in the habit of growing the bene for the purpose of making his own oil, and informed me that he had made twenty-two bushels to the acre or at that rate, and he made from it all the oil that he used. His name is D. L. Thompson, and he is still in Beaufort. C.

GLADIOLUS.—Nelly L. The bulbs you inquire about can be procured of C. L. Allen, corner of Columbia and Doughty streets, Brooklyn, N. Y., together with all the other best new varieties of the gladiolus.

COTTON ON HEAVY LAND.—I should like to see an article in THE RURAL CAROLINIAN on the cultivation of cotton, from beginning to end, on land too heavy to be cultivated on the Dickson method throughout; and what implement should be used in the place of the

sweep. Are there any horse-hoes or cultivators that will do, and where are they to be had? M. H.

Cayenne Pepper.—One plant grown in a half barrel filled with *rich* earth will supply enough pods for most families, and, if kept in a green or hot house, or in a warm room during winter, will live for years.

R. C.

Manure for a Garden.—P. On your heavy clay soil, fresh stable manure should be abundantly supplied, together with such vegetable matter—leaf mold, etc.—as you can get, composted with ashes. For a concentrated fertilizer, guano is best. If the soil is deficient in lime, a top-dressing of that will improve it.

Grain Weevil.—O. O. The true grain weevil, (*Calandra Granaria,*) in its perfected state, is a slender beetle of a pitchy red color. The female deposits her eggs on the wheat after it is housed, and the grub hatched therefrom immediately burrows in the grain and devours it, leaving nothing but the hull. There is no mystery about the insect or its origin.

Black Rust.—"Harmon" wishes to know the cause of the black rust in cotton, and the remedy. His land is black, flat and gravelly, and when *fresh* the cotton on it is not affected by rust.

Peach Trees from Cuttings.—"Will the peach grow from cuttings?" I answer yes, and give my experience. In February, 1868, I made cuttings of the peach in this way: I cut ten inches of growth of 1866, and three buds of 1867, to each cutting. I made a smooth, sloping cut on the lower end of the cutting, and set it in rich, well-broke soil, with the upper bud even with the surface of the soil, then mulched lightly with straw. Every cutting thus made and set are now growing, and will bloom this spring. I think the cuttings ought to be made in November or December. A. C. Steede.

Americus, Miss., January 31, 1870.

Umbrella China Tree.—Your correspondent, P. E. C., wants to know about the "Umbrella China Tree." It is very superior to the common variety, having somewhat the appearance of numerous parasols, each end of limb forming one, giving a very ornamental style to the tree. I have never seen it advertised except at "Flower Dell Nursery," Navarro County, Texas, but of course others have it. Any one will be well repaid for the trouble of obtaining it. M. H.

Edgewood, S. C.

The Gen. Grant Tomato.—You refer in your last number to the "Gen. Grant Tomato." I procured a package of the seeds from Boston last year, and divided them with several friends. They failed with us all, the fruit rotting on the stem before ripening. Whether this failure be due to the dry season, or to a want of accord, as in the case of its namesake, with disfranchised rebels, you may be able to say. S. W. B.

Big Shoulder.—M. H. desires to know what the "big shoulder" on horses is, and how to treat it; also, if a mare that has it will do to breed from.

Preparing Red Pepper.—In the March number of The Rural Carolinian, I notice a request from "Sub," about preparing red or Cayenne pepper. For my own use I found it the best plan to pound the pods in a mortar as soon as gathered, until reduced to a paste, (soon done,) then dry this paste either in the sun or a stove, and when thoroughly dry, pound to a powder, tying a piece of cloth around the mortar and pestle to prevent the dust from getting into the eyes of the person pounding. The seeds will not pound, which is no objection, as they only lessen the color and weaken it. For those who appreciate the *highest* flavored pepper, the true Cayenne is the only variety worth cultivating. I send you a few small pods of the "simon pure." R. C.

Geraniums.—A lady "Subscriber" wishes us to give her a list of a dozen of the best geraniums for pot culture, with a few remarks on their cultivation. Tastes differ in regard to flowers as well as everything else, and no two persons, probably, would choose the same varieties throughout. The following are all desirable, if not the best:

1. *Mrs. Pollock;* 2. *Incomparable,* (Zonale;) 3. *Bicolor,* (Zonale;) 4. *Mountain of Snow;* 5. *Bronze Queen;* 6. *Beaton's Perfection,* (Zonale;) 7. *Rustic Beauty,* (Dwarf;) 8. *Italia Unita;* 9. *Brilliantissima;* 10. *Silver Queen;* 11. *Alma;* 12. *Holly Wreath,* (Ivy-leaved.

We must, for want of room, reserve remarks on the cultivation of geraniums for another occasion.

Garden Engine.—Mrs. W. B. R. Such an engine as you require would cost, in Charleston, $25.

Cashmere Goats.—J. H. inquires if any of the Cashmere goats can be had in this State. I have a few which are descended from those brought here by Dr. Davis. I

have one young buck and two ewes, thoroughbred, which took two premiums at the late fair, that I will dispose of. M. R. Clark.
Columbia, S. C.

Curious Vegetable.—"Pinder." Your curious vegetable is, doubtless, the *snake cucumber* described in the present number. See "Novel and Curious Vegetables," p. 421.

Centrifugal Mill.—R. B. C., Florida. Mr. Francis G. Cart, Charleston, S. C., would, no doubt, be pleased to send you a description of the mill; but as we understand he is to have one in operation here before this reply will reach you, it may be well for you and others interested to come and see it for yourselves.

Manure for Orange Trees.—A correspondent desires to know what is the best manure for orange trees.

Making Fowls Lay.—"Pinder." We propose giving from time to time the best instruction our reading, observation and experience may place at our command in regard to poultry and kindred subjects. Our correspondent speaks of his cocks as Black Spanish and half-breed Poland, but does not tell us of what breed his hens are. Perhaps he has not a good breed. We have some common dung-hill fowls which, during the winter, laid scarcely at all, while our Black Spanish hens, treated in precisely the same way, laid constantly.

The Papaw.—J. A. C., Greenville, Miss. We shall be glad to receive the seeds and plants next fall. The beans and squash seeds you mention have never come to hand. We wrote to you some time ago.

Moles Again.—If Mr. Fuller, the mole man, could see a trap which I have, I think he would award the $100 to me, instead of the castor bean man. I gave the bean a fair trial, and they failed with me. But my trap never fails. I set the trap across the mole path or track, and the first time the mole passes it sticks three spikes through him. If I was at Mr. Fuller's with my trap, I could catch every mole on his plantation in a very short time. B. W. Bass.
Weldon, N. C.

Training the Scuppernong.—I am planting a vineyard of Scuppernong grape, (two acres,) and am in doubt about the best plan for an arbor. The vines are thirty-three feet apart. Will wire answer? A. S.

We consider wire the best and most economical material for a Scuppernong arbor. It will cost more in the first place, but will last a great many years. See what Mr. Freolich says on this plant in January number.

INDUSTRIAL ITEMS.

——General G. T. Beauregard, of New Orleans, recently obtained letters patent for improvements in apparatus for propelling cars and other vehicles on land, and boats on canals or rivers, by means of overhead wire rope, operated by stationary engines or other power placed at intervals along the route.

—— A Memphis paper states that George W. Grader, a citizen of that city, has taken the bull by the horns, and invented a machine for ginning cotton and cleaning cotton seed, which promises to revolutionize the whole system of cotton ginning in the country. Taking cotton from the boll, Mr. Grader's machine leaves no motes, the falls comprising nothing but the dirt. It cleans the seed, making them more valuable for manufacturing purposes, and saves the planter a large percentage on his crop.

—— We saw, the other day, at Von Santen's Bazaar, King street, an admirable contrivance for promoting cleanliness and health, called, we believe, the Universal Bath. It is a portable rubber bath-tube, which may be used anywhere and everywhere, and for all kinds of bath, and when out of use may be hung up on a peg or packed away in a closet. Take a look at it.

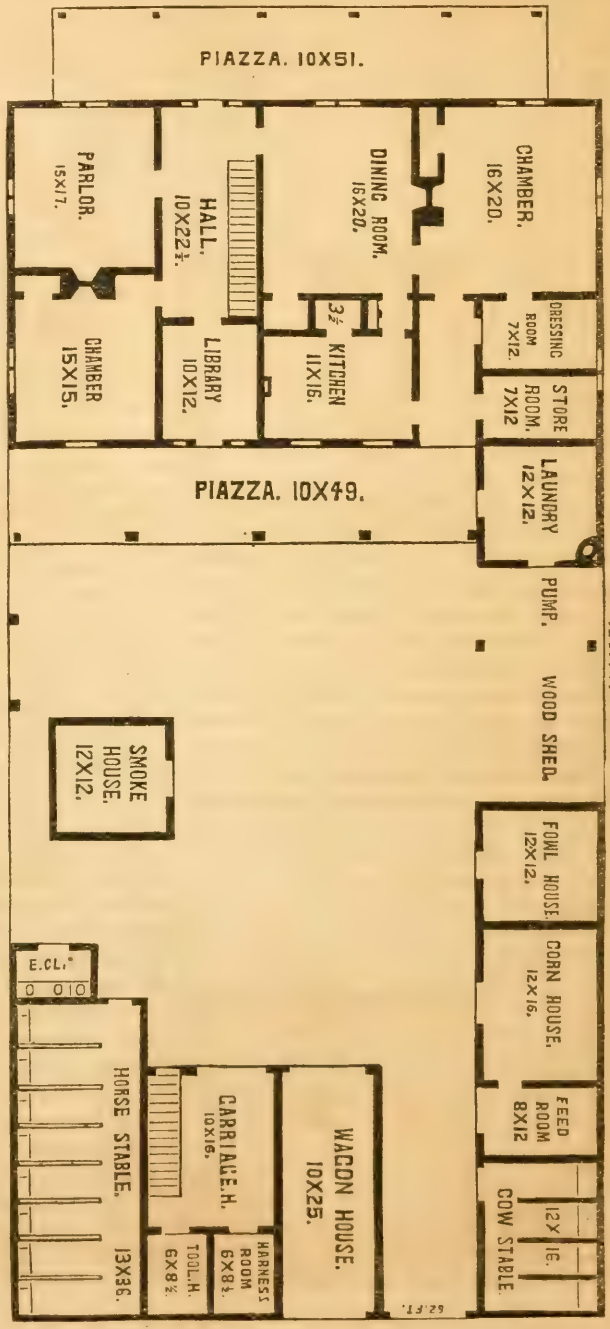
—— M. Felizet, in the *Agricultural Bulletin*, Paris, calls attention to the fertilizing nature of the cinders which result from the combustion of coal. A fourth or fifth part of cinders, roughly broken and mixed with garden-mould and drives detritus, when placed in the holes reserved for plants, quickens, in an extraordinary degree, the growth of every species of tree.

——C. L. Allen & Co., corner of Columbia and Doughty streets, Brooklyn, N. Y., have our thanks for a fine selection of bulbs and flower seeds. Knowing that we can fully trust both their taste and their honesty, it will be our own fault if we do not have a handsome show of flowers.

DEPARTMENT OF RURAL ARCHITECTURE.

ARRANGEMENT OF FARM BUILDINGS.

As we intend to make rural architecture a permanent feature of our magazine, we have arranged for it a separate department, and secured the contributions of one of the ablest architects in the country, which will appear monthly till further notice. We call special attention to the following designs, in which Mr. Lee has, given us an admirable arrangement of farm yard and buildings, promotive of security, convenience, comfort and health, as will be seen by the following description, furnished by him to accompany them.—ED.



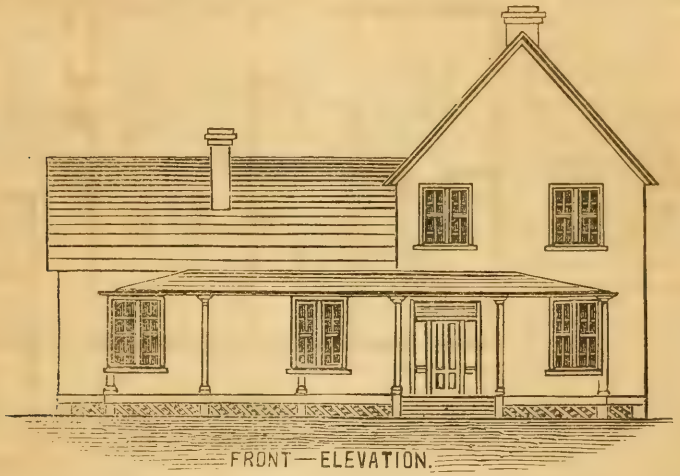
The accompanying sketches represent a plan of a compact arrangement of farm house and necessary out-buildings.

Everything is in as simple a style as is consistent with comfort, and the amount of accommodations may be increased or diminished to answer the wants of the individual builder.

In order to give sufficient area in the rear yard, it will be seen that a rather unusual spread has been given to the house, giving all the *necessary* accommodation for a small family on the first floor—an arrangement most agreeable to most housekeepers, who are by no means, as a rule, fond of climbing stairs. Should the wants of the family require it, the accommodation may be very largely increased, by carrying up a story over a part or the whole ground floor. In the elevation I have shown how two rooms may be added, with a large

closet or small sleeping apartment cut off from the hall.

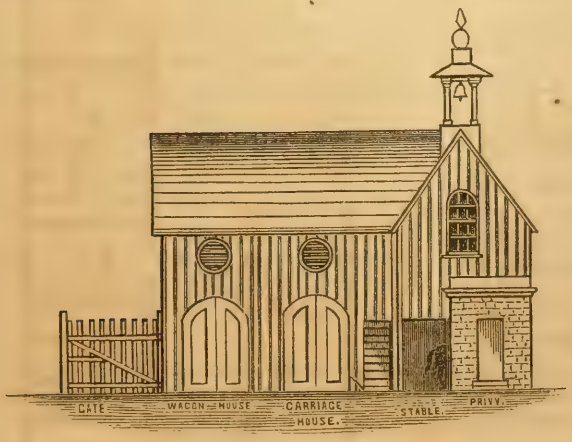
I have attempted to furnish every requisite in the way of out-buildings. First, we have adjoining the laundry, and communicating almost directly with the kitchen, that first requisite to good housekeeping, a plentiful supply of water, in a pump, protected from the weather by a commodious shed; next, and almost equally convenient, is a large wood shed, sufficient to contain several months' supply of fuel, if properly stowed; then comes the fowl-house, the last building that would belong properly to the department of the



FRONT—ELEVATION.

mistress of the family. Beyond these are the buildings belonging strictly to the farming department. Corn house, with a capacity of about 2,000 cubic feet; a feed room, with seed room above, surmounted by a pigeon-house; then a comfortable cow stable, without which no farm should be, and which no one who properly appreciates the pleasures and profits of a well-kept dairy, will be without.

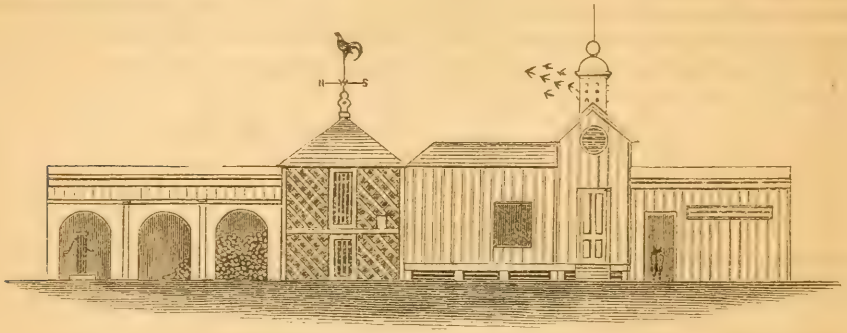
Turning here at the large wagon-gate, which may be built in the cheap style represented, or in a stronger and more ornamental manner, we next come to the wagon and carriage shed, with harness and tool room in rear of latter, and commodious hay or fodder room overhead, well ventilated with openings, circular or otherwise, as the fancy may dictate, filled in with Venetian lattice. This loft, as well as the rooms over the stable, are communicated with by a narrow stair-way, opening up to the right of the carriage-house door. Should it be desired, the feed room, and the harness and tool room might exchange positions, and a door be opened from the feed room directly into the horse stable, which comes next. I will not here say more about the arrangement and finish of cow and horse stables, as I propose in my next article to furnish plans for a horse stable with full details.



Immediately adjoining the horse stable is a sufficiently large privy, which may be fitted

with Moule's patent earth closet fixtures; and thus a large amount of valuable manure may be saved for the farm and garden.

Next, but separate from all other buildings, is a large smoke house, twelve feet in the clear, and sufficiently elevated to make three tiers for hanging meat. The smoking is done by means of a furnace, in which the fire is



built from the outside, lessening the danger from fire, and rendering it unnecessary to open the door at all while the smoking process is going on. The foundations are so secured by filling in below the sills with scrap tin, broken bottles, etc., as to prevent the inroad of rats and mice.

In the centre of the yard, leaving space for a carriage drive around it, may be placed a dairy, shaded by some suitable tree.

Another pump would be needed for watering stock, which should be placed in the rear of the barn in an open lot for the stock to run in. There are no openings in any of the out-buildings to the outside, and no arrangement for sleeping any of the house or farm servants within the enclosure, so that everything will be under the immediate charge, and within the hearing of the master.

A small gate may be built into the wall under the pump shed, and another large or small, as convenience may require, may be built on the opposite side near the smoke-house.

As the drawings take up so much space, I have made the description as brief as possible, but hope that all, with the drawing to refer to, may be able to understand fully the design. I will therefore conclude with a statement of cost, estimating lumber at $15 per M., and labor at $2 50 to $3 00 per diem.

Farm-house complete	$3,200
Wagon, carriage-house and stable	825
Pump and well	60
Wood and pump shed	125
Fowl-house	50
Corn-house, feed room and cow stable,	450
Smoke-house	100
Fencing and gates	50
	$4,860

So that, allowing for small omissions and extras, the block of buildings as represented in the drawings, ought to be built at a cost not exceeding $5,000.

ALEX. Y. LEE,
Architect and Civil Engineer.
Columbia, S. C.

MERE MENTION.

——The Southern Queen is the name of a new variety of the sweet potato, said to be very productive and a good keeper.

——The State Auditor of Georgia reports a loss of *two-fifths* of the colored population of that State in the last nine years! from improvidence, ignorance, and want of care.

——The Patrons of Husbandry, a new agricultural and horticultural secret organization, is making noted progress throughout the United States.

——We are indebted to Mr. B. H. Massey, of Fort Mills, York County, for another big turnip weighing ten pounds.

——The Quitman (Ga.) *Banner* mentions a turnip, supposed to be the largest ever raised in Georgia, weighing twenty-one pounds. It was grown in Brooks County.

——Bohemian cotton is a new variety for which great things are claimed in Texas. It is said to be six weeks earlier than the old kinds, and remarkably prolific. Will some one send us a specimen of the lint and a few seeds?

——General R. E. Lee has addressed a letter to the people of the South disparaging the introduction of Chinese and Japanese as laborers. He thinks the final result would be injurious to the country.

Correspondence.

LETTER FROM A LADY.

Editor of The Rural Carolinian:

You invite the ladies to contribute to your columns, and since yours is a work I wish to see flourish, because it is building up an agricultural paper of merit at home, I will throw in a line now and then for the encouragement of others, if nothing more.

I would consider myself as having accomplished some good if I could induce the ladies to read your magazine, or similar ones, in preference to the trash that flood down from the opposite side of Mason and Dixon's line.

After the war closed, and we began to get the delaines and merinoes again, I thought I must have a magazine to make the children's clothes by, and something to read in odd hours. I tried *Godey* awhile. He was entirely too love-sick. Then I took *Arthur*. He did better, till that piece on "Rebecca" came out burlesquing the South and Southern manners; then I concluded to do without any of them. Circumstances having placed me at the management of the farm, I concluded the same amount of money would pay well in an agricultural paper. I subscribed for yours because it was "home-made," and feel amply repaid already—the last number is very interesting. I also have a copy of the Proceedings of the Agricultural and Mechanical Society, with which I am much pleased. I am almost a mind to compete for some of those prizes. I farmed last year on a small scale with two little boys and a mule and colt, and made between one hundred and fifty and two hundred bushels corn, and one bale of cotton, besides potatoes, rice, etc., and that with very little manure. I feel encouraged to try a little higher grade of farming this year, and if successful, will report to your pages in due time.

I feel satisfied that all we need in this country is a *good resolution, patience to wait,* and *less fear of being degraded by work.* If more of the young men who drive fast horses would walk them before some of the improved plows, themselves walking behind, the country would recuperate faster, and we would do better without Sambo or Cuffee.

G. E. M.

Crusoe Valley, February 7th, 1870.

MALARIAL DISEASES.

To the Editor of the Rural Carolinian:

I respectfully request to be permitted through your pages to suggest to the Executive Committee of the South Carolina Institute the propriety of offering a premium for the best essay on the causes, remedies and prevention of the malarial diseases of the low country of South Carolina.

I am aware that several causes may combine to develop malarial disease, but I am induced to make the foregoing suggestion from a belief that the general, almost universal use of tainted and unwholesome water from wells, ponds, etc., has not had sufficient importance attached to it in the category; while the pestilential atmosphere is generally attributed to the poisonous exhalations from the soil, its infiltrations and seepage constitute the only water for drinking and culinary purposes of those inhabiting the localities more particularly subjected to malarial influences. In other States similarly circumstanced, a different policy prevails, and with marked benefit. In Florida, the health or sickness of individuals or families is distinctly indicated by the use or disuse of cistern water; and in Texas, immediately after the erection of his cabin, the settler constructs his cistern as a protection against the diseases of the climate.

A case bearing very strongly, if not conclusively, on this point, has been adduced by a gentleman of North Carolina, prominent as a business man. He is the proprietor of two contiguous plantations, on one of which cistern water was exclusively used, and it was almost entirely exempt from sickness; the other had no cistern, and its occupants resorted, as is generally the case in that section, to the wells and creeks for their supply, and disease became so prevalent as to render the working of the place unprofitable. As an experiment, the proprietor had these conditions changed by having the cistern water conveyed to the suffering plantation, and restricting its use at the other, and the result was very soon so decided and convincing in the improved health at the one place, and increased sickness at the other, as compelled a prompt discontinuance of the experiment, and the substitution of one which was much

more satisfactory—the construction of another large cistern on the infected place. The gentleman who makes this statement is too intelligent to be deceived himself, and too truthful to attempt to deceive others.

Additional instances might be adduced of similar tenor, but it would be at the expense of your valuable space. If what has been said is sufficient to attract the attention of those to whom it is addressed, and contributes in any degree to the loosening of the grasp of "the pestilence that walketh in darkness, and the destruction that wasteth at noonday," on one of the most delightful regions of the State, the writer will feel that he has not labored in vain. H.

HINTS FOR LOW COUNTRY PLANTERS.

Editor of Rural Carolinian:

Your ready and liberal answer to my request of a specimen copy of your magazine, prepared me for the treat which I have in perusing four numbers which you sent me. I am *more than satisfied*, and herein enclose two dollars that I may continue to enjoy the pleasure of its perusal. I say pleasure, for I do not expect *much* profit from it, as I am an old man. I have only a twelve-acre farm, and my soil is of the toughest clay, whereas your province is mostly in the sands. Oh, how I long for a return to my native sands of the low country. I have some lands on the coast in Georgia, but am too old to earn the means of improving them, and only can hope that my son may be able to do so, in which case the back volumes of your RURAL will be a guide and a treasure to him.

I am *familiar* with the sea islands, and since removing up here and seeing a good deal of the farming of various locations, *I feel convinced that the owners of the level sandy lands, and particularly those of the sea islands, have not the faintest idea of the value of their lands and location.* What a source of manure in the lay galls, ponds, marsh mud, *salt water*, *live* raccoon oysters, *crushed* and fermented, crabs and refuse fish, some or all composted together, also shell-lime. It costs me more here to *haul* a bushel of lime from the railroad than it *did* on the coast to gather, burn and spread it.

It makes me laugh, and almost cry, too, to remember the cutting and manuring with marsh grass, when with a good application of lime, *clover* might be grown at less expense, to put twice the amount of vegetable matter into the soil without the cost of hauling. I hear some one chuckling:

"Did you ever see clover growing in the sand?"

Yes, and you may, too, if you will take a ride on the shell road to White Bluff, near Savannah, and open your eyes on the way.

That's only *white* clover. Let it be; but do you get enough of it, as you see here, that it can grow, and it will do, until you *try* if *red* clover will not grow too?

I feel like it, and will take the privilege of an old man and be a little garrulous to-day, if you will excuse me. You won't say that I am an old fogy, when I give you my opinion that thorough *underdrainage* is the *sesame* to the culture of the flat, sandy lands of the coast.

"What! drain sand?"

Yes, drain sand, and be sure to have a capacious outlet. What are the high beds made every year, anew, but an effort to raise the crop out of the reach of the floods? They answer *that* purpose, but they also increase the evils of drouth. Let sand be *underdrained*, and the crops be planted on, or under the level, after Mr. Dixon's plan, and neither flood nor drouth will hinder the result of high manuring.

I have seen on Beaufort Island the cotton beds blown flat, and the seed scattered. Would not flat culture avoid that evil? And yet that location was sometimes so wet as to make the cotton shed profusely.

Although I speak so disparagingly of Southern culture, I believe there was, and is among our cotton and rice planters a more thorough knowledge of the subjects of their culture, than has been attained of the wheat plant, by the farmers of the North, or even by Mr. Mechi himself. A. S.

[Our friend will probably be surprised to see his letter in print, but he will, we hope, excuse the liberty we have taken in publishing it, in view of the benefit its suggestions may confer on his fellow agriculturists. His three principal points suggest volumes, and we are only constrained by lack of available space from writing pages at least on each: 1. Value of our Coast and Sea Island Lands, and their Local Advantages; 2. Lime and Clover as Manures; 3. Underdraining for our Low, Sandy Coast Lands. Who will give us essays on each of these important subjects? Will not "A. S." give us his ideas on these points more in detail?—ED.]

BREAKING OXEN.

Mr. EDITOR: I see a request of yours in the February number of THE RURAL CAROLINIAN, that some one would give his experience in breaking oxen, for the benefit of your readers.

There are various methods of breaking oxen to the yoke, which is very easily accomplished. A good plan is to fit a bow tightly around the neck, boring large holes in each end of the yoke, into which fasten poles about the length of buggy shafts, which drag along on the ground on each side of the ox, preventing him from running backwards, thus

soon gentling and accustoming him to the yoke. After letting them thus run singly for a few days, a long yoke may be made, and the two yoked together, and turned loose without the shafts. Let them occasionally be driven gently about thus. Soon a small tree-top may be hitched to them, and let them drag this about, being carefully guided off of stumps and trees, but letting them otherwise go pretty much where they please. After this they may be hitched to a wagon or cart, and all they need is a little practice to make them fine draft animals. In fact they are the easiest broken of all animals.

One of my neighbors once lost an ox. He asked a venturesome young man living with him if he could not break a wild young bull to work with the other ox. He readily consented, and having obtained sufficient aid to yoke the bull and ox together, he took his seat on the fore wheels of a wagon, the tongue of which was fastened to the yoke. At the signal, the bull and ox were turned loose. He was in a wide, straight lane; down this they ran for about three miles. They becoming worried, he stopped them, turned them around, drove them back and hauled right on with them.

We have seen that it is an easy matter to break oxen to the yoke. I will give you, in another communication, my method of breaking them to traces, collar and hames. I will here state that I far prefer the traces to the yoke when any considerable distance is to be travelled. J. J. McDaniel.

Lots, S. C.

AN EXPERIMENT WITH RICE.

Mr. D. H. Jacques:

Dear Sir: You state in your Rural Carolinian that you would be glad to have for publication a concise statement of any valuable experiment in agriculture. I send you the following that may be relied on in every particular:

In the year 1869, Mr. Henry Shanklin, residing in the suburbs of Pendleton Village, planted a small plot of ground in what we call "golden rice," containing by actual measurement 2,000 square yards, lacking 420 square yards of half an acre. Planted one-half bushel and one quart of seed the sixth day of April, after having the ground well plowed and cross-plowed and harrowed, then laid off with a bull-tongue eighteen inches apart, and after dropping the seed, covered and pressed down with a hoe, and tracking on the seed with the feet. Hoed once the middle of May, and took the grass out with the fingers. Applied the water at that time, and kept it running through every row until the 1st of July, then turned off for eight days, and hoed it, then turned water on again on it, and kept it running through the rows, as before, till the rice began to turn, then took the water off gradually. When cut, the crop was threshed by hand, and carefully cleaned and measured. The quantity yielded was fifty-six and a half bushels in the hull, weighing forty-five pounds to the bushel; equal to 135 bushels to the acre.

Judge Cheves once said, in an agricultural meeting, in Pendleton, that the average crop on his Savannah plantation was seventy-five bushels per acre. R. F. Simpson.

Pendleton, S. C., Feb. 4th, 1870.

REMARKABLE CURE OF A MARE.

I have a fine young mare, that was taken sick last March. She appeared very dull and stiff, had little appetite and great difficulty in swallowing. On examination, I found her throat swelled a good deal, and in a few days I lanced it. In the meantime she became very lame. I commenced at first doctoring her for the distemper. I tried everything I could think of, but could find nothing that would relieve her.

After she had been sick about one month, her *udder* commenced swelling. The swelling extended down her thighs, and up her belly nearly to her forelegs. She was very stiff, and had a disagreeable smell, (very much like that which glandered horses have,) and I became discouraged, as everything that I had given her failed to give any relief. In looking over an old number of the *American Stock Journal*, I saw a case in which a horse had been cured of glanders with iodide of potash. With the advice of a physician, I determined to try it, combined with queen's delight. I gave her about one quart of the tea, (boiled very strong,) with from twenty-five to thirty grains of the iodide of potash dissolved in the tea, and given to her as a drench every day for five or six weeks. I also bled her twice every week, taking as much blood from her each time as she could bear. Her udder broke and run a great deal of offensive matter. Her throat swelled and and broke three different times. She was so low that I thought she would surely die. I offered to take twenty-five dollars for her. To-day would not take ten times that amount. She is sound, hearty and in fine order, and, I think, worth as much as if she had never been sick a day. I believe she would have been dead long ago had I not given her the queen's delight and iodide of potash.

H. D. B.

Newberry, S. C., December 29, 1869.

Mr. Editor: Will you allow me, through The Rural Carolinian, to call public attention to a work recently published. I desire to do this because it strikes me as remarka-

bly well adapted to meet a public want. It is entitled:

"A helping-hand for town and country; an American home-book of practical and scientific information concerning house and lawn; garden and orchard; field, barn and stable; apiary and fish-pond; workshop and dairy; the many important interests pertaining to domestic economy and family health. By Lyman C. Draper, Corresponding Secretary Wisconsin Historical Society, and W. A. Croffert, author of "The History of Connecticut;" 200 illustrations. Published by Moore, Wilstach & Moore, Cincinnati. Sold to subscribers only."

It is to be noticed that this title-page promises much. The promise is redeemed. The volume seems to be a compilation from agricultural and scientific publications in every portion of the United States and Europe—making, as a whole, a rare collection of facts and suggestions adapted to aid young farmers and housekeepers. My wife is greatly pleased with it, though she has been recording recipes to aid in housekeeping for the last thirty years. I notice but one defect in it. That is a defect which pertains to our own Southern publications, namely, the information is not exactly adapted to the state of things in the up country, with its variety of soils and productions. This is no fault of the publishers. General rules in agriculture cannot meet every case. And if the up country abounds in a great variety of soil and situation, it is the province of common sense to make a proper application of general principles. Still we would like to see how common sense succeeds in given cases. RUSTICUS.

INDUSTRIAL SCIENCE.

One of the most significant of the fictions that have come to us from the East, represents that a certain churl came, by the aid of magic, into possession of a garden filled with beautiful flowers and delicious fruits, with woven vines forming lofty arbors, and labyrinthic walks threading the entire area. Apples of pure Hesperian gold hung within tempting reach; lucid cascades shot from miniature cliffs, at equi-distant points, in circle around the garden; and ambrosial breezes overswept the whole scene, bearing the sweet and ever-varying melody of one bird-song, upon which the garden with all its beautiful realities depended; so that, should it cease for an instant, the whole possession would vanish forever.

But the owner of the garden, ignorant of the dependency, was continually trying, though fruitlessly, to ensnare the bird, so much did he hate the music.

EXPLANATION.—The bird-song is industrial science, and the churl represents that large class of agriculturists who forever clamor against it; who with folly-fattened prejudice and stiff-necked pride would annihilate "book-farming," were it in their power to do so. Yet to the genial influence of this science they are indebted, though they know it not, for all that is either beautiful or useful about their homes.

P. J. M.

THE CHILI PUMPKIN.

Editor Rural Carolinian:

Please find enclosed, in accompanying package, some seeds of the Chili Pumpkin, given me by a ship captain from the South American Pacific Coast.

This vegetable, I am assured, possesses excellent qualities for table use, and is remarkable in the fact of its being capable of preservation for a very long time, on which account it is peculiarly esteemed by navigators in their long voyages around the Cape.

Its adaptation to the climate and soil of our coast was tried without success; while in Pickens District a few seeds were planted, and the growth of the plant being rapid, a large area of ground was soon covered with its luxuriant vines, which fruited well, the fruit attaining considerable size, when an early frost fell, destroying not only the plant but causing the fruit to mildew and rot.

After the above experiments, I am convinced that a suitable climate and soil is to be found in Upper South Carolina; and that by observing to plant the seeds at intervals of a week from the 1st of April, in the ordinary hot-bed known to the intelligent gardener, and removing the plants into a rich, damp, clay soil, so soon as danger from late frost is no longer to be apprehended, that the fruit will mature before fall, thereby adding another new and delightful vegetable to our already long list.

Trusting that one of your subscribers in Greenville or Spartanburg may be found willing to try the interesting experiment as above, I am very respectfully,

January 25, 1870. A. H. H.

IMMIGRANTS WANTED.

MR. EDITOR: I have just seen the letter to you in your last issue, from "Up-Country Farmer," headed "Land Wanted," and in reply would say: Here we have scarcely anything but land. Bring your cash, pay for it, and do as you please with it. We can sell you land at $10 per acre, much of which will yield two bales per acre, without any manure. Healthy situations near—within a mile or two; safe, durable and certain lands for corn or cotton.

"Up-Country Farmer" suggests that we might get as good citizens in the State as out of it. Who doubts it? But will their

congregation in one county lessen the evils of negro domination in the State, by increasing the physical force of the whites, or by increasing their votes in the State.

We prefer, therefore, immigrants from abroad, if we can get them; Northerners next, and last of all, from the Southern States, unless from those Southern States where they could spare us enough, and then have a majority of whites left. We would promote the interest of the South first; next, those of the State, but most especially those of the white race in this county, and our own particularly.

Lands sell here at from 25 cents to $10 per acre. If "Up-Country Farmer" buys about here on a credit, he will never pay from his crops, no matter what he makes, if he hires "negro labor." He will only enrich the shop-keepers. A Northern man who had tried it for years has now employed immigrants. He said to me: "The negro won't do, sir; he steals all you can make."

LOW-COUNTRY FARMER.

Hygiene and Household Economy.

LETTERS FROM A HOUSEKEEPER.

III.

MY DEAR CARRIE: My housekeeping goes on as usual, of course; but now spring is here, my flower garden claims its share of attention. I am but a novice here, but, with Harry's horticultural skill to guide me, I expect to have a handsome display of floral beauty by and by.

Choice bulbs are expensive, but a friend at the North has sent us some very fine ones, of which I hope to make a favorable report in due time. As they form a good though but small selection, the list may be useful:

LILUM AURATUM.—Get a dozen of these if you can afford it. I have but one. It is a magnificent new lily from Japan. It is easy of cultivation, and delights in our light sandy soil.

LILUM LANCIFOLIAM.—(Common Japan lilies.) I have *Roseum*, *Monstrosum* and *Melpomene*, which are among the finest varieties.

GLADIOLUS.—Fine varied varieties, one dozen.

TUBEROSES—One dozen.

AMARYLLIS—*Formosisima*, (a plague on the Latin, but the catalogues will have it so.) A fine flower, but our native *Amaryllis Atamasco* (Atamasco lily) is quite as charming.

TIGRIDIA.—Two of these—one a rich scarlet, spotted and tinged with pure yellow.

CANNA.—A magnificent foliage plant, and hardy in our climate. Different varieties.

Add to these a few *Tritomas*, *Dahlias*, *Pœonies*, and other more common bulbs and bedding plants, and one need not lack for bloom and beauty. Most of these may be planted here from the middle of March to the first of May for a succession of flowers.

Of annual flowers, our list of seeds is choice and full, made up from the catalogues of Allen, Dreer, Gregory, and others, (not forgetting the double diadem pink;) but more about flowers when they have made their appearance. At present they are scarce with us, except sweet violets and verbenas. Speaking of verbenas, do you know how beautiful they are trained on a little trellis—treated as *climbers* instead of *trailers*. Harry says this is unnatural. That may be, but it is pretty, as the one I have growing in a flower-pot will show.

My window gardening is neither extensive nor expensive. My hanging-basket is of wire, lined with moss, and instead of costly greenhouse plants, it is filled with pretty ferns from the woods, with a little climber twining up the wires by which it is suspended, and trailing squaw vines hanging over the sides; but you would acknowledge that it is beautiful.

On the stand under the window is the potted verbena I spoke of, a miniature aquarium, and a tiny bit of rural verdure and bloom transferred to a city house in the shape of a circular sod of Houstonias mixed with fine grass. It is fitted into a saucer, kept moist with water, and looks just as fresh as it did by the roadside whence it was taken. The Houstonias are of two kinds, one with white and the other with blue flowers.

My aquarium is simply a large deep glass preserve dish, with a bit of rock-work in the centre, some growing water plants, a few little silvery fishes, and some aquatic insects, etc. I feed the fishes every morning, and it is interesting to see them come up to the top of the water for their food. They are quite tame and very playful, chasing each other around the rocks and among the stems of the plants.

Well, to come down from the ornamental to the useful—a few words about cooking. While the garden furnishes only turnips, radishes, lettuce, spinach, celery, mustard, onions, etc., and we are waiting for our green peas and snap beans, it is sometimes rather perplexing to know what to prepare for the table; so I hunt up recipes and try new dishes now and then. Here are a few that are good:

GRAHAM MUSH.—This is something simple, light and healthful for supper or for breakfast, when you can think of nothing else for a change. Make it (of unbolted flour) the same as corn meal mush. To be free from lumps a part of the flour should be stirred in cold water. Be sure it boils before adding the rest of the flour, and that it boils

while stirring it in. Let it boil several minutes after that. Serve with maple syrup, or syrup made of light brown sugar. I make it for supper, and as I generally have some left, I cut it in slices and fry for breakfast, eating it with syrup as at first.

PAIN D'OR—(Golden Bread.)—Take a pint of milk, too eggs, two tablespoonsful of sugar and a little salt; beat the eggs and mix with the other ingredients as for a custard; cut into slices a loaf of light bread, (baker's bread is the best for this purpose,) and dip each slice separately in the prepared sauce or custard, and fry a light brown. This is a French dish which we like much.

I intend to tell you something about my chickens, ducks and other pets, but must close for the present.

As ever, yours, MARIE.

THE RURAL CAROLINIAN is clubbed with the following first-class newspapers, at the rates annexed. Remittances in all cases direct to either office:

	Daily	Tri-Weekly	Weekly
Richmond (Va.) Dispatch	6 50	4 00 semi-w.	$3 00
Augusta Constitutionalist	10 50	7 50	4 00
Savannah News	10 50	6 50	3 00
Macon Telegraph	10 50	5 00 semi-w.	4 00
Columbus Sun	11 00		3 00
Mobile Tribune	11 00		4 00
The Weekly Gleaner, Columbia, S. C.			4 00
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Union Times, Unionville, S. C.			4 00
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Locomotive, Opelika, Ala		5 50 semi-w.	
The Scooba Spectator, Scooba, Miss.			4 00
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"Enquirer," Yorkville, S. C.			4 00
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1 column	15	28	40	60	100	back cover, 50 per
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⅛ column	3	6	8	12	20	

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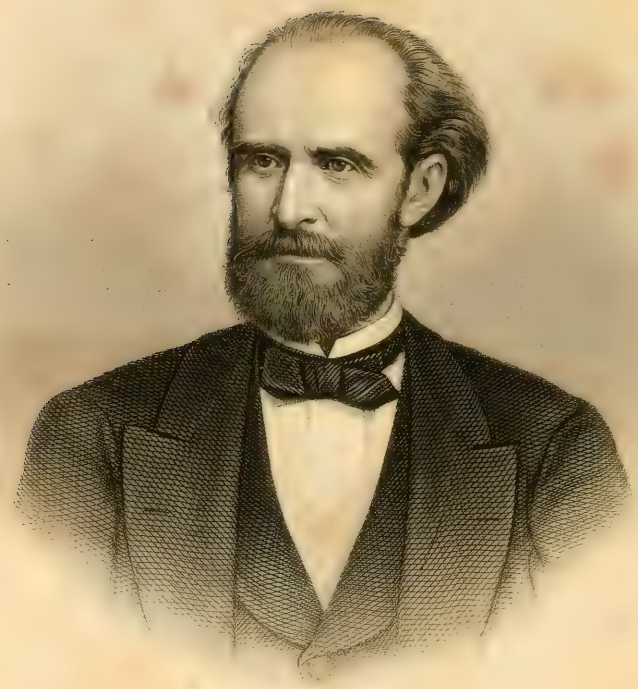

Geo. W. Williams

THE

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A Sketch of the Life of George W. Williams, one of the Self-made Men of the South.

We believe that no kinds of writings are more valuable, instructive, and even interesting, to the youth of a country than the memoirs of that class of men who have been styled self-made—not that there are any self-made men in fact, since most of them have been endowed, originally, with large capital moral and mental. The gift of intellect is theirs, a temperament which responds to the intellect, a concentrative aim, and a resolute will which rarely succumbs, or only temporarily, to opposing circumstances. Still, in one sense, and in comparison with the great body of mankind, they are self-made. They have not enjoyed the large amount of so-called "advantages," viz.: education in school and college, the appliances of wealth, the influence of family—all of which are found, however, to be inefficient in making a man, who lacks the natural advantages which we have indicated. There are many remarkable histories on record of the great self-made men of other countries—men who have risen to eminence in art, science, commerce, trade, and numerous other departments of life. We now propose to put on record a sketch of one, born in the South, whose career shows him to be well worthy of comparison with the self-made men of any country, and in any of the avocations of life; achieving wealth and position with but few of the adventitious aids of society. We hope, in this brief memoir, to present to our young men of the South the study of a man, whose example of a steady aim from the beginning, earnest prosecution of his purpose, unrelaxing and cheerful industry, native intelligence, pure character and stern integrity, if followed with the same degree of ability, can hardly fail to work out, in the case of all who shall adopt it, similar results, especially if these virtues are seconded by a modest Christian faith and practice, such as mark the character of our subject.

George Walton Williams, now of Charleston, South Carolina, was born in Burke County, N. C., December 19, 1820. He was the fourth and youngest

son of Major Edward Williams, originally from Easton, Massachusetts, who married Mary Brown, of North Carolina. Major Williams was a farmer of thrift, energy and method. His wife seconded him with a proper degree of sympathy, and, like her husband, was recognized as a person of energy, piety and benevolence. Under the influence of such parents it may be readily conceived that the moral and domestic training of their sons was sound and wholesome, good habits being inculcated, rather than the mere exercises in memory of the schools, so commonly supposed to constitute what is called education.

In 1823 Major Williams removed from North Carolina to the more genial and fertile region of Georgia. He chose his future home in that lovely valley known as Nacoochee, in Habersham County. Here he purchased a large tract of land; and the first lessons in skilled labor and judicious culture were, perhaps, brought into this region in great part by him. With the prompt coöperation of a few other farmers, the fertile and beautiful valley of Nacoochee was soon brought into a comparatively high state of cultivation. Major Williams first introduced herds grass, timothy, clover, cheese dairies and other improvements of like kind; and in this way, did more, perhaps, to advance the agricultural interests of Upper Georgia than any other person. The better to promote the training of his sons, and especially to crown the virtues of temperance, energy and general usefulness with another, hardly less necessary, that of self-reliance, he gave to each of them a small portion of land which he was to cultivate, after his regular work on the farm was done, for his own exclusive profit. This was the right way. It threw the boy upon his own responsibility, and furnished him at the same time a personal motive for effort. With the proceeds of each little tract, the boy was expected to provide his own wardrobe and to secure his petty fund of pocket-money. His acre, more or less, was his *peculium*, and George, the youngest, concentrated his energies upon it. It embraced an Indian mound, famous in the traditions of the red men, as the spot in which Nacoochee,* the beautiful maiden of Cherokee, was buried.

Hither, when his task-work of the farm was done, would George repair at evening to work his individual crop. As yet he aimed at nothing beyond the culture of the simplest "staff of life." He planted corn exclusively, and usually realized satisfactory results from his labors, securing small pecuniary profits, which satisfied the boy.

But one season his prospects were gloomy. The country suffered from a prolonged drouth. The crops were everywhere endangered, and the mound upon which George's little farm lay, was necessarily in greater danger than the level or bottom lands. The anxiety of the youth, as he lingered upon the mound, and meditated by moonlight on the fate of his withering corn, was probably in degree as humiliating to him as the failure of a speculation is to a great banker, who has risked everything on the cast of a die. Suddenly the

* Nacoochee, or the Evening Star, from which the valley takes its name.

moon's rays shot over the waters of the Chattahoochie, and the murmur of the river came up to his ear. He caught an inspiration—our great-grandsires of Britain would call it the whisper of a benevolent fairy—and, arming himself with a bucket—a *piggin*, perhaps—George rushed down to the river, drew up the water, marched resolutely round his field, watering every little hillock; and so satisfactorily did he irrigate his drooping corn, that he not only saved it, but made an abundant harvest. And this work was done by moonlight! Here you see the genius of thought, energy, industry and a definite aim in the lad, which have subsequently been developed into the successful, and, as we phrase it, the self-made man. What a lesson here of perseverance, courage, resolute will and industry. Note this boy-development of germ, and follow his progress, step by step, and year by year; never tiring, never halting in his work, never desponding, but pressing forward, as if an enemy in front was continually provoking his pride and challenging his manhood. "The child," as Wordsworth wisely tells us, "is the father of the man."

By the time young George had reached his eighteenth year, he had outgrown the sphere in which he had hitherto dwelt, his little Indian farm, and the precincts and influences around him. He was no longer satisfied with his quiet mountain life, and his mind was already grasping, vaguely, no doubt, at larger fields of exercise. He resolved on a change; and his desire was quickened by certain domestic events. He had lost his excellent mother,—a severe loss to one who was so largely indebted to her for his home training. In 18—, strangers were flocking to the region of Nacoochee, as to a freshly opened "El Dorado." It was reported to be rich in gold, and the gold of the land was said to be good. Among these new comers was a gentleman, who brought with him a highly educated and accomplished daughter. This lady was remarkable for her fine intellect and imposing person. She soon became an attraction in the eyes of Major Williams; nor was this either strange or unnatural, as he was a widower not yet sixty, and youthful in his feelings. Young George did not sympathize with the supposed new passion of his father, and took the liberty of expostulating with him upon the great mistake he would make in marrying a woman thirty years younger than himself.

But the good father had a will of his own, and was not disposed to harken to the advice of a youth not yet out of his teens, especially his own son, and one to whom he had always taught the stern lesson of implicit obedience. This circumstance hastened George in his resolution to leave Nacoochee. Having a penchant for trading, his natural instincts led him to regard the commercial world as his proper sphere of action.

To this decision the father offered no objection, but resolving to test the character and spirit of his son, he gave no facilities for carrying out his purpose, and withheld all the means which were supposed necessary to enable him to get away. It is possible, too, that he fancied, by this course, he should discourage the young adventurer in his new project.

But he little knew the "pluck" of the boy to whom this sort of negative

opposition proved rather a stimulus than a discouragement. George, who had not failed at heart or spirit, when the drouth was burning up his little corn crop, was not now to succumb; his resolution was only made more firm by this tacit opposition; and, doubtless, with some natural emotions of weakness, with a long, last yearning look at his quiet home, and at the scenes of his childhood, he took his way on foot, sternly resolved to return triumphant in success, or never again to show his face in the valley of Nacoochee.

Major Williams possessed horses and buggy, and would, doubtless, have helped his son in his progress, had he lowered his tone sufficiently to solicit his aid; but his independence of spirit revolted at the idea of concession, and, stubbornly determined, George made his way on foot, the whole distance, one hundred and fifty miles to Augusta, arriving in that city in October, 1838. At this point and period he had in his pocket about ten dollars; this petty sum, with his courage, sobriety, native energy, concentrative purpose, thrift, tact, and above all, a paramount faith in the over-ruling God, constituted his whole capital for that start in life which he was about to make.

At the period of which we write, the State of Georgia had given no such decided proofs of development, whether in education or internal improvement, as have since distinguished her. When George Williams reached Augusta there were but ten miles of railway within her vast territory; and in the moun tain region the means of education were very limited. So that without money, friends, or any of the various aids and influences which are supposed essential to the progress of youth, on the threshold of manhood, he was indebted almost wholly to his own strong individuality and untiring industry in working out his career.

He was fortunate in procuring very soon a situation in Augusta, with Mr. Daniel Hand, in a wholesale grocery establishment, receiving, for the first year, the small salary of fifty dollars and board.

This, surely, was the thin edge of the wedge, for Mr. Hand, a shrewd man of business, was not slow to perceive the natural resources of the youth. He soon discovered that he might safely yield him his fullest confidence, and the green mountain boy's salary was shortly increased from fifty dollars per annum to one thousand.

This was a great advance, and George was not long in making it greater. At the age of twenty-one, he bought Mr. E. C. Scranton's interest in the house, and the firm was changed to that of Hand & Williams.

As soon as George Williams had attained this position, he gave evidence of that tenacious moral character which distinguishes him. About one-half of the stock in trade of the establishment consisted of spirituous liquors. Mr. Williams had been taught by his father that it was wrong to traffic in "liquid fire," and he himself was not slow in discovering the truth of his father's judgment. He had already seen that the liquors which they sold were doing incalculable mischief. One man who had bought a barrel of whiskey had been drowned while in a state of intoxication.

Mr. Williams prevailed upon his partner to abandon wholly this branch of

their business. It was done, notwithstanding the general prediction that, by this course, they would lose fully one-half of their trade. But, with a firm trust in Providence, he persevered firmly in carrying his morals into practice; and the result justified his hope, faith, and his principles. So far from losing, the profits of the house, at the close of the year, were five thousand dollars more than in the year preceding. Our young moralist was encouraged in this honorable Christian course by such men as George F. Pierce, James E. Evans and William M. Wightman, gentlemen high in the church, and too well known to need eulogium.

Meanwhile he pursued his mercantile career in Augusta with such success and such an increase of capital, that it was found expedient to enlarge the field of operations. The temperament of the young merchant naturally craved the most extensive area for work. Favorably impressed with Charleston, he visited that city in 1852 for the purpose of establishing a house. Here, again, he was told that no grocery could possibly succeed, unless liquors constituted a large portion of the stock. But, true to his former opinions, and firm in his faith, he with his wonted boldness determined on the experiment. The house was established according to his principles; no liquors were sold, and, in the course of a very few years, it was second to none in the city, in the extent of its business and measure of its success. The sales at Augusta and in Charleston, soon rose from one hundred thousand to one million and a half *per annum;* the profits from ten thousand dollars per annum to one hundred thousand dollars. What a contrast between the petty capital of ten dollars, which the boy had when he reached Augusta, at eighteen, with that which the man could command, fifteen years after, when he was but thirty-three years old! The young reader must be taught that luck or fortune had nothing to do in this matter. You must believe that Divine favor is always accorded to energy, industry, economy, thrift, and the earnest perseverance in your labors when you have set your hands to the plow. Assuming that you *aim* rightly, according to the peculiarity of your *gifts*, and work laboriously for the development of those *gifts*, never suffering the mind to be diverted from its duties by its passions, and the results can rarely be otherwise.

Virtues do not fail of being recognized, even where they are not fully honored. Those of George Williams were honored as well as recognized in Charleston. In his fortieth year, working as strenuously as ever, at the head of two large commercial houses, he was an Alderman of the then opulent City of Charleston; Chairman of the Committee of Ways and Means; a Director of one of its Banks, and in two Railroad Companies. The general financial counsellor of a host of friends, and ever ready to engage in all public works, interests and enterprises which looked to the prosperity of his adopted city and State, his hands were kept busy, and his head had little time for rest. His Celtic temperament alone, perhaps, is the secret of his great powers of endurance under the exacting and unceasing labors of his life.

Mr. Williams is a zealous, though in no respect a bigoted, member of the

Methodist Episcopal Church; there is nothing narrow or sectarian in his religious opinions and feelings. He has accepted various official duties, in religion and education, which imply large responsibilities. He is a Steward and Trustee of Trinity Church, Charleston; a member of the Joint Board of Finance of the South Carolina Conference; and a Trustee of Wofford College, to which, as well as to Emory College, Georgia, he has made liberal contributions.

He has been twice married; first, in 1843, to Miss Louisa A. Wightman—sister to the present Bishop of the Methodist Episcopal Church—an excellent and pious lady. The children of this marriage are all, with the sainted mother, in the *Better Land.*

His second wife was Martha F. Porter, a daughter of John W. Porter, of Madison, Georgia—a lady possessing rare qualities of heart, mind, and person. This marriage took place in November, 1856. They have three promising children, a son and two daughters. Mr. Williams's domestic tastes are paramount. His little world of Home is his earthly paradise. Here the cares of the day are not permitted to intrude. The tea-service and tea-hour seldom find him from home. No business interferes with that; his evenings are spent in the bosom of his family. Here he finds time to devote himself to books, the studies of which he quietly pursues without pretence or ostentation. The accumulation of a fine library is one of the present desires of his mind.

We have now reached a painful period in our country's history—that which found two powerful sections on the eve of civil war, and preparing for a most terrible conflict. The United States Government was concentrating all its vast military and naval powers against those States of the South which had united in the formation of an Independent Confederacy. Of the merits of the issue between these sections, it is not our province to speak. South Carolina having, as it were, struck the first blow, the strong arm of the United States was directed against her metropolis.

The effect of this action was immediately felt by the business house of Mr. Williams, the wheels of which could not be stopped in a day or a month, as it was largely engaged in foreign and domestic trade. To build up the foreign trade of Charleston, the house had arranged for the importation of sugar and molasses from the West Indies, and for coffee from South America. They had chartered two ships, which were then loading with rice and lumber for the Rio market. These vessels were to bring return cargoes of coffee. They did not sail until after the fall of Fort Sumter, in 1861.

As it required fully six months to make the *round* voyage, Mr. Williams took the precaution to order the ship "H. P. Russell" to touch at the Island of St. Thomas, and, in the event of the blockade of Charleston, then to proceed to New York. The brig "West India" was to run the gauntlet, and enter Charleston, if possible. This she did successfully, in October, 1861, though under a raking fire from the blockading fleet. The "H. P. Russell," with her cargo of six thousand bags of coffee, marked "G. W. W. & Co.," and worth one hundred and forty thousand dollars, was, meanwhile, sailing

as fast as wind and tide would carry her into the very jaws of the enemy—the United States Government having passed the Confiscation Act before the vessel reached New York.

This circumstance made it necessary that Mr. Hand should remain in that city for the purpose of disposing of the coffee before it was landed. He was, at the time, the senior partner of the firm of G. W. Williams & Co.; but he had his office in New York, the better to attend there to the interests of the Charleston concern. Mr. Hand took no part in politics, but was opposed to the secession movement. He knew enough of Northern sentiment to assure him that any attempt to dissolve the Union might bring on a disastrous civil war. With this conviction, and no longer being able to serve his house, it was quite natural that he should wish to retire from business; and he did so, in the fall of 1861. He could not, however, withdraw his capital, and it was consequently perilled when the Confiscation Act was passed by the Confederate Congress. Mr. Williams, seeing that all the life-long earnings of his ancient employer and partner were about to be swept away, took prompt measures to communicate with him; and, as all postal service between the two sections had been abolished, he despatched one of his partners, by way of Kentucky, to seek Mr. Hand, and to request his immediate return to the South. In the meantime he restored that gentleman to his original position in the firm. By this prompt and honorable action Mr. Hand's fortune was saved.

But he had to undergo a very annoying personal ordeal. On his arrival in the Confederate States he was arrested for suspected Union sentiment, and imprisoned. Mr. Williams hurried to his relief, stood by him with steadfast friendship, and was not moved by the threats of the Vigilance Committee, but was firm, never once wavering or shrinking from what he held to be a most sacred duty.

Meanwhile, the great game of war had begun, and was desolating the South. Four of Mr. Williams's partners were in the Confederate army, and all of his clerks in service. Charleston was blockaded by sea, threatened by land, and almost daily under fire. Food of every description became scarce, the prices mounting higher and higher from day to day. The distress of all classes of people daily increased. It was now a serious question, with the benevolent and thoughtful, where the thousands of helpless women and children were to get their bread. In this condition of things, Mr. Williams had no longer heart for trade. He closed his business, and proceeded to organize a "free market," and "subsistence store," for the benefit of soldiers' families and the poor of Charleston. He had been appointed, by the State Legislature, Chairman of the Free Market Board, and, by the City Council of Charleston, Manager of the Subsistence Store.

With his usual skill, promptness and energy, he threw himself into this labor of love; and through his exertions, aided by a few public-spirited citizens, thousands of the destitute and suffering were supplied with food daily. Mr. James N. Robson was actively engaged, the whole time, in the country,

procuring supplies of provisions, and these were distributed among the destitute during the entire war.

The friends of Mr. Williams, who regard this beneficent enterprise and labor as the crowning achievement of his life, hardly over-rate its value. The gigantic undertaking, with its thousand details of duty, its cares, trials and responsibilities, was of an exhausting character, and proved almost beyond his powers of mental and physical endurance. Nevertheless, he held his ground and stood at his post to the last. The very day that the city fell, he issued rations to some ten thousand people, of all grades and colors, from his private residence, which had been removed to Hampstead, in the northeastern part of the city, in consequence of the bombardment. So great was the pressure that it became necessary to barricade the doors of the house, and distribute the provisions through the windows, for everything in Charleston was in the wildest state of confusion. At one moment, when the crowd was greatest, a terrible explosion took place at the depot of the Northeastern Railroad, by which it is said that some hundred persons had lost their lives, and it was believed that the immense powder magazine, in the Half-Moon Battery, near his dwelling, had been blown up. The panic occasioned by this dreadful catastrophe beggars all description.

It will be seen from these details that Mr. Williams was in Charleston when the city was evacuated by the Confederate forces. Through his appeal to the retiring Confederate general, he obtained an order for all remaining supplies and stores of the government. These had been already destined to the flames, but were thus saved through his prompt action.

The fires, caused by the burning of cotton, the gunboats and in part by incendiarism, were then raging fiercely, and threatened to lay the city in ashes. In this crisis, Mr. Williams called on the Mayor to urge upon him the necessity of surrendering the city, especially as the fire department was disorganized, in consequence of its members being arrested by the small squads of Confederate soldiers who had been left in Charleston for that purpose. Mayor Macbeth appointed Aldermen Gilliland and Williams to be the bearers to Morris Island of the following communication:

To the General Commanding the Army of the United States, at Morris Island:

Sir: The military authorities of the Confederate States have evacuated this city. I have remained to enforce law, and preserve order, until you take such steps as you may think best.

Very respectfully, your obedient servant,

(Signed,) CHARLES MACBETH, *Mayor.*

In the meantime, Mr. Williams, learning that the United States troops, under Colonel A. G. Bennett, were landing on Atlantic Wharf, in the rear of the old Exchange, he proceeded to that place, and had an interview with Colonel Bennett. Mr. Williams informed him of the disorganized condition of things in Charleston, and asked for assistance to aid in extinguishing the fires. This assistance was furnished by Colonel Bennett. After the interview the subjoined reply was sent to the mayor's note:

HEADQUARTERS UNITED STATES FORCES,
CHARLESTON HARBOR, NORTH ATLANTIC WHARF, Feb. 18, 1865.

Mayor Charles Macbeth:

I have the honor to acknowledge the receipt of your communication of this date. I have, in reply thereto, to state that the troops under my command will render every possible assistance to your well-disposed citizens in extinguishing the fires now burning.

I have the honor to be, Mayor, very respectfully, your obedient servant,

(Signed,) A. G. BENNETT,
Lieut.-Col. Commanding U. S. Forces, Charleston.

The navy took possession of Fort Moultrie and Castle Pinckney, and a volunteer party of ten men, from Morris Island, planted the United States flag on Sumter. The soldiers took possession of the citadel and arsenal.

Mr. Williams procured from the Federal military authorities a guard to protect the several mills and warehouses in which the provisions had been stored, and thus saved from the devouring flames food enough to sustain twenty thousand people for three months, which he issued to the citizens after the fall of Charleston, when they had neither money nor the means of procuring support. Many were thus rescued from great want and suffering.

This work done, he felt the necessity of rest. But a man of such temperament and training cannot yield much to leisure and repose. His purpose was not to engage at once in mercantile pursuits, but to establish a bank, which, under the existing state of things, had become one of the first necessities of a trading community. In the prosecution of this object, he proceeded, *via* Hilton Head, to Washington, to procure a charter for the First National Bank of Charleston. But, before he had succeeded in this object, his old friends interposed. They demanded that he should not retire from the business which he had pursued so successfully and to such general satisfaction. Orders for merchandise began to pour in upon him, and the planters who had, here and there, saved a few bales of cotton from the torch of Sherman's army, were forwarding them to his house for sale or safe-keeping. He was, as it were, forcibly driven to the resumption of his long-familiar duties.

Prompt as usual, he went to work and erected three large warehouses for the storage of cotton, in that district of the city which had been overswept and made a charred or naked plain by the great fire of 1861. In the meantime he had filled his extensive stores in Hayne street with abundant supplies of merchandise. Here, also, he opened a banking house, and his was the first Southern house that resumed business in Charleston after the close of the war; and but for this promptitude of action—which, by the way, is one of Mr. Williams's most eminent characteristics—the cotton in the country would have been picked up mainly by Boston and New York houses, at twelve or fifteen cents; whence, also, the merchants of the interior would naturally have drawn their supplies of merchandise.

These were no ordinary performances. Here was courage, confidence, energy, a resolute will and the largest evidence of business intelligence. In a short time he found himself more deeply immersed, more extensively and

in a greater variety of occupations than at any former period of his life; and he has reaped the fruits of his extraordinary exertions in abundant success. He is apt to say to his good wife, when she exhorts him against overwork, that it is almost as difficult to wean him from trade and commerce as it is to cure the drunkard from his love of the bottle. "I am," he often says, "in the very prime of life, and it would be not only a sin, but a suffering, blessed with health and strength as I am, to sink into repose and idleness. Life consists not merely in being, but in doing."

He is right; and the truth is that he simply obeys a law of his nature. He cannot help but work. We have spoken incidentally of his temperament. We do not know, but believe it to be Celtic.* He is sanguine, eager, quick to conceive, quick to act, and under the training of habitual labor, which corrects even impulse, these faculties become great powers. Mr. Williams is of medium size, lithe, active, quick of movement, quick of speech, quick of decision; his complexion is somewhat florid, his eyes are bright, keen and vigilant; his *phisique* may be gathered from his engraved likeness which his friends consider good, but lacking in the expression of the eye; briefly, he is a Celt, with something of the stern training of the Saxon. Considered in connection with his evident impulse of temperament, it is interesting to note how rigidly he enforces order and discipline, and the ease with which he manages the affairs of a large commercial establishment. He seems to carry his business in his grasp. It does not drive him, but he drives it—now with the spur that goads the mule, now with the curb that keeps the noble blood horse from breaking bounds. Just in all his dealings, true to all his promises and pledges, he is one of the most solid men of the South. His workings ever on the square, and tenacious of all the laws of trade. His temperament is nervous, hence his seeming impatience.

His chief virtue, in fact, is his *integrity;* and integrity, implying good faith and sincerity, as well as honest dealing, includes a long list of other virtues. The golden rule, so hard to practice, "Do unto others as you would have them do unto you," was at an early period impressed by the venerable father upon all his sons. Major Williams was wont to say that he preferred to leave to his children a *good* name, rather than riches; thus properly valuing *character* as more precious than wealth. However hard the practice of the "golden rule," we are happy to think that Mr. Williams invariably acts upon it. Take an example. During the war, his firm never refused Confederate money from its debtors, even for gold obligations. This liberal course saved thousands from great embarrassment. During his whole business life he never failed to meet his obligations to the day, except at an early period of the war, when his remittances were stopped by the Vigilance Committee. Just so soon as it ceased to be treasonable to pay one's honest debts, all his obligations were discharged in full, principal and interest, notwithstanding

* We have since learned that Mr. Williams is of Welsh origin, confirming one of our conjectures.

he was informed that his notes could be bought in New York at fifty cents on the dollar. But, having the means to pay to the uttermost farthing, he spurned the proposition.

As our purpose is to furnish an example to the young Southron now beginning his career, and under auspices which are far from encouraging, we feel that our work would not be complete, or our teachings thorough, if we did not illustrate the success of Mr. Williams by recording some of his principles. We entertain the hope that the youth who shall read this sketch may be led to imitate his habits of industry, sobriety and usefulness.

Mr. Williams believes in work as a fundamental law of God. He loathes idleness; eschews ease and self-indulgence. He is of opinion that one must find out what he is good for, concentrate his talents and energies on a given object, and pursue it to its completion. He has no faith in the desultory, the wandering, the purposeless mind. He prefers systematic labor, according to one's capacities, as the true secret of success. He is opposed to speculation, and has no faith in those who wait for the turn of the die, or, like Micawber, who are forever looking for something to turn up. His inventive mind is for turning up its own somethings. He lays his plans carefully, and surrounds himself with men of confirmed business habits, who know their duties, and perform them with the regularity of clock-work. He consults respectfully his associates and partners, in the first instance, and hears, but weighs and acts for himself. And, to his judgment, usually justified by the result, they confidently acquiesce. The controlling power, the final resolve, has been, for many years, entrusted to his decision. How vast and various have been his occupations. His firm rarely gives a note; and yet his Charleston and New York houses have moved as many as forty thousand bales of cotton in a season, and without accepting a time draft. The rule is to advance three-quarters the value of the cotton, and hold as long as the margin is kept good. The house, being opposed to speculation, does not buy cotton on its own account. Since the close of the war, Mr. Williams has been too much occupied in commerce to take much part in public affairs; he has had but little to do with politics since the defeat of Henry Clay in 1844.

In the summer of 1865, he was a delegate from Charleston to Washington to ask for the restoration of civil government, and in the fall of the same year he was elected a member of the State Convention.

The devotion of Mr. Williams to commerce has by no means blunted the finer sensibilities of his nature. The strifes of trade, the worry and excitements of business, the frequent annoyances to which men of business are subject, and which are especially felt by a trained and methodical man, may sometimes make him appear stern and exacting; but he has never shown himself insensible to the claims of the virtuous, the worthy, the wise, the good, and the suffering.

In the domestic circle, Mr. Williams seems to change his nature. He is no longer the autocrat of the counting-room. In his home, he is simply the gentleman, the tender husband, the affectionate father, kind friend—solicitous

for the happiness of all around him. Here he cultivates a natural taste for flowers, enjoys music and appreciates the fine arts. His home, by the way, is quite as well regulated as his counting-room. Order prevails. There is no discord.

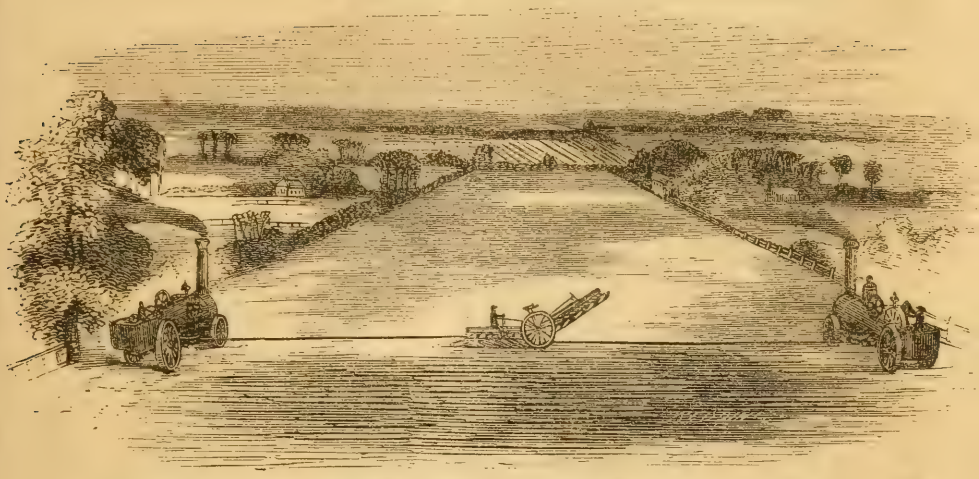
Every self-made man, toiling from boyhood to manhood, with few chances of education, unless by close observation and attrition with men, must be conscious of deficiencies in certain respects, more important to social life than in the struggles of trade; and the wise worker will naturally seize upon all opportunities for supplying his early defects of education. Mr. Williams, enjoying these opportunities, has availed himself of them.

He has accumulated, as already mentioned, and continues to accumulate, a fine library. His walls are adorned with pictures from good artists. He has made the tour of Europe, enriched his mind with the fruits of foreign travel, and published a series of letters from the Old World, which would do credit to some of the practiced pens in literature. He has written modestly, without effort or pretension, as friend to friend, describing briefly what he has seen, and the impressions made upon him. Another series of letters, lively and excursive, were dedicated to a rapid tour in the Island of Cuba. His travels have also been extended to Canada and the far West, of which he has given pleasant sketches.

Briefly, then, at fifty years of age, with all the buoyancy of youth, expert in business as ever, George W. Williams furnishes a study for those who would learn the true secret of success. He does not lose himself in trade, though he may live by it. He has the wisdom to perceive that there must be, in his own mind, a continuous growth, keeping pace with his worldly resources. He is in training for the development of still higher sensibilities. It is, perhaps, in proof of this, that, with the feeling "for the old range," he has bought property in Nacoochee Valley, where he first earned his bread. He is now building a beautiful summer home under the cooling shade of majestic Yonah, and in full view of the little Indian mound where he cultivated and watered his corn from the Chattahoochie by moonlight. He will make this valley as lovely to the eye and hand of Art, as it comes to Art, beautiful from the hands of Nature.

Distinguished Agriculturists.—Among the Romans, agriculture was held in the greatest esteem. Cato in the second, and Narro in the first century, previous to the Christian era; Vorgel, at the time of the birth of our Saviour; Palladines, Pliny and Columella, have all extolled its excellencies. Several of the noblest families of Rome derived their patronymics from some vegetables which they were famous for raising, such as the Fabii pea, Lentuli, Ciceroncs, etc. These were the days of Roman agricultural glory. Cato says that when they praised a good man, they called him an agriculturist, and a husbandman, and it was considered a great honor to be thus spoken of. Cincinnatus, who flourished 460 years before Christ, was the plowman of his own four acres; and when the Sammito Ambassadors visited Curtius Dentatus, they found him at work with his vegetables. Cato says: "Study to have a large dunghill;" and to this I would add, treat your dumb laborers as inferior brothers, deprived of speech.

The Steam Plow in the Field.



The steam plow is no longer a myth. I have seen it work, and perform its work so satisfactorily that I feel assured it is only a question of time as to how many will, in the next generation, be in actual use in America. At present, there are but very few sets west of the Atlantic, though in England, at Leeds and Ipswitch, there are 3,400 mechanics constantly at work upon them, who complete ten sets every week, and have always on hand over 100 orders.

If the reader will examine the foregoing engraving he will comprehend at a glance the working of the "Tackle," (*i. e.*, two engines and the plow,) that I saw. It is not my purpose to speak of the mechanism of the engines. Suffice it, that they were two eighteen-horse engines, with a windlass or drum under each boiler, around which were coiled 800 yards of steel rope. As the engines begin work, one of these drums unwinds as the opposite engine draws the plow towards it, thus coiling the rope around the drum beneath it.

The plow is a mammoth concern, balanced on two iron wheels, as heavy and large as the driving-wheel of a railroad engine, and each end of the plow has three massive shares, following each other *en eschelon*, each about three inches to the left of its file-leader. This heavy iron framework, weighing several thousand pounds, is balanced upon the axle of the two wheels, like a wide V upon its apex. When one arm of the V is on the ground, the other is in the air, and *vice versa*, as it goes to and fro across the field. Each share is fifteen inches wide, and breaking the ridge between itself and neighbor, turns over a slice eighteen inches wide, and on an average eighteen inches deep. Thus the three shares each trip across the field breaks up and turns over, in huge rolls, eighteen inches deep, a breadth of fifty-four inches of land. The land through which these plows were drawn was black, heavy, close, river-bottom land, so crusted on top that, riding across it on horseback, my horse scarcely made an impression.

In another portion of the same plantation were two more engines harrowing the land that had been previously plowed by the steam plow. This harrow was sixteen feet long, seven feet wide, had forty iron teeth, each two inches square and eighteen inches long; and on the frame of the harrow three of us rode back and forth across the field with no apparent hindrance to the rapid motion of the harrow. Land over which this harrow passed, though turned over in hard baking rolls as large as a flour barrel, was left as mellow and soft as an ash bank. A horse labored to walk over the land that had been harrowed. A man would sink four to six inches deep in it.

Elsewhere in the plantation the "ratoon" cane, (stubble of last year's growth, which makes a crop this year,) in beds seven feet apart, had just been plowed by the steam plow, drawing five subsoil plows through each row, up one row and down the next, and so on, leaving the cane land almost level and thoroughly subsoiled.

This is an unvarnished statement of what I saw, and, so far from being an exaggeration, is purposely kept within the bounds of matter-of-fact narration, lest I might be charged with infatuation. The plows are the property of a Mr. Lawrence, who is the pioneer on this subject in the United States. His sugar plantation is the Magnolia place spoken of in the November number of The Rural Carolinian.

Mr. Lawrence assured me the increased production of his land prepared by this plow was near 100 per cent. over that broken up by four-mule plows. Indeed, in the same fields with the steam plow were large turning plows, drawn by four mules each, and cutting off a slice only ten inches wide, and an average of seven inches deep, and not moving near so rapidly as the steam plow.

Mr. L. says the steam plows can be used also as stump-pullers. He had drawn up thousands with them, and I saw a log ninety feet long, seven feet across the butt and three feet at the top, which he had grappled and drawn out of a bed two feet under the ground after the superincumbent earth had been removed. This log was discovered by the point of one of the shares touching it.

The engines move on four wheels with tire, twenty inches wide, and can travel up or down hill, and even across the field previously plowed.

Mr. L., though greatly pleased with the "Tackle," does not, in my judgment, profit by the advantages they afford him in one or two ways; for instance, he works as many mules in proportion to his number of hands as any sugar plantation I have visited, and, in addition, has two complete sets of "Tackle." They increase the yield by more thorough preparation; but should they not also supplant a large proportion of the teams used on the plantation?

A water-cart, a wood or coal cart, an engineer to each engine, and the hands following the plow, are the necessary force to a "Tackle." They will turn over from six to ten acres a day; harrow twenty-five or thirty, and subsoil (cultivate) fifteen acres daily.

If the planters anywhere in the cotton region of middle South Carolina, Southwestern Georgia, the cane-break lands of Alabama, or the bottoms of Mississippi and Arkansas, would form stock companies and introduce these steam plows, how feasible it would be in a short time to supplant the unreliable negro labor, or supersede it almost entirely? Southern planting must come to this eventually. D. WYATT AIKEN.

Enlightened Agriculture.

The time has come when we need, more than ever, all the aids which science and art can furnish to our system of husbandry. Science to teach us a knowledge of the various soils we till, of the structure and physiology of the various plants we cultivate, and of the constituents and valuable properties of the various manures we use.

Art to give us the best implements and means of saving and directing human labor. Both are necessary to an improved system of husbandry.

As valuable a thing as "practical knowledge" is to the farmer, (and we place a high estimate upon it,) it must be confessed that all our *modes* of management, all our practical rules and all our knowledge, derived merely from experience, are more or less empirical, until we learn the *why* and the *wherefore*. Or, in other words, the philosophy of the thing. In proportion as we base our treatment of vegetable life upon a knowledge of the laws which govern it, so will we be nearer to making gardening, farming and husbandry a science. Agriculture, as a comprehensive term which embraces all these, must necessarily, in its practical details, remain an *art;* but, like medicine, its *modus operandi* may be based on scientific principles.

The medical man learns the structure of the human frame, *anatomy;* he studies the laws which govern it in disease as well as in health, *physiology;* the qualities and properties of the various drugs and other agents he uses for curing diseases and preserving health, *materia medica* and *Therapeutics*. He bases his practice upon his knowledge; he works on scientific principles.

The intelligent husbandman, or farmer, or gardener, should learn the structure of the various plants he has to cultivate, *botany;* their different organs or parts, and the functions they perform, *vegetable physiology;* the food which they mostly need, and the best manner of supplying it, *manuring*.

Then as the various plants which come under his attention in the garden, the orchard, or the farm, have constitutional differences, he must learn their habits, and adopt his treatment accordingly. In a word, he must keep in mind the *end* he wishes to accomplish, and the *means* he has at his command.

Take for instance the kitchen garden. How various and how diversified in habits are the plants which he brings together under his management?

There are fibrous-rooted plants and tap-rooted plants; the former spreading out on the surface, the latter penetrating and requiring a deep and mellow soil. Some are erect and bushy, others trailing on the ground and

joint-rooting. There are some cultivated for their *foliage* only, *cabbage*, *lettuce*, *spinach*, and requiring, therefore, the most highly stimulating and concentrated manures to force them forward rapidly. Others for their *seed* only, *peas*, *beans*, *okra*, etc., which need less stimulating food; others again for the fleshy or juicy *envelopes* of the seed, *squashes*, *melons*, *tomatoes;* some for the *tubers* or underground branches, *potatoes*, *ground artichoke;* others for the *flower-bud* only, *globe artichoke*. The tap-rooted plants, as *turnip*, *beet*, *carrot*, *parsnip*, etc., need a deep, friable, well-pulverized soil, highly manured just under their roots; whilst the runners and joint-rooting vines, as *melons*, *pumpkins*, *sweet potatoes*, etc., need a clean and cultivated surface, on which their numerous branches may expand and strike root.

The *asparagus* has its stem with buds or eyes under ground, and shoots up a flower stalk which we cut when young and tender, as a vegetable. The *onion* bears its bulb just on the surface, which is only an enlarged bud formed by a sudden contraction of the stem, and a thickening of the base of the leaves. Its natural position is, therefore, above ground, and if it be earthed up like other plants, loses its tendency to form the bud.

Some prefer a damp, others a dry soil; some require the full light and heat of the sun to perfect them; others, like *celery*, need the shade to soften and neutralize their too acrid qualities, and the total absence of light around the leaf-stalks to blanch and make them crisp and tender.

All these facts must be kept in mind, and we must base our treatment upon a knowledge of them if we would secure the best results.

As a general rule, high manuring and deep cultivation embrace nearly all the requisites of good management, but we can attain better results by special treatment. There should be a diagnosis of each particular case, and the treatment made to correspond with the peculiar condition, or wants, or habits of the plant. Take the two great staples, *cotton* and *tobacco*. Here are plants cultivated for totally different objects. In the one, the valuable part is the *appendage of the seed;* in the other, *the leaf*. Doubtless, both the fibre of the cotton, and the flavor and strength of the tobacco, are more or less influenced by climate and the texture of the soil on which they grow; but the main fact of difference which, requires special treatment, is that the cotton will need such food as will favor the formation of flower-buds and maturing of seed, whilst the tobacco will only want general vigor to produce the greatest amount of leaf.

The treatment for excessive growth of stem and leaf (woody fibre) is very different from that which would favor the development of flower-buds and seed-vessels. Very high manuring, which stimulates the growth of weed excessively, is unfavorable to the formation of seed. It is only when there is a check to this vigor, that the formation of flower-buds takes place. Every cotton-planter has learned from experience that his cotton may grow too much and too late in the season, waste its strength in making weed, when it should be bearing fruit. The true treatment, therefore, for the cotton plant, would seem to be a moderate amount of such food as will give a weed of

sufficient size, combined with the necessary mineral ingredients required to perfect the seed. The lint being only an appendage of the seed, it follows that there must be food enough to mature the seed before we can secure the lint. This is the main fact; but we can also take advantage of the laws which govern variation in plants, and, by repeated and careful selection, obtain a variety which will give this appendage in greater quantity or of longer and finer texture. This subject is merely alluded to in illustration of what has been said before. It is of great significance, and deserves more attention than we can now devote to it. R.

Notice of the Guanape Island Guano.

This variety of Peruvian guano has the present season, for the first time, made its appearance in Charleston. The ship Elliott Ritchie, (formerly the Harriet Lane, of the United States Navy,) loaded with this commodity, having on her way to Baltimore been disabled off Hatteras, was compelled to put back to this port, where her cargo has been discharged and sold. An opportunity was thus afforded me by her consignees, Messrs. G. W. Williams & Co., to examine the cargo.

A similar occurrence enabled me fifteen years ago to inspect the first cargo of the stony phosphate of Mong's Island, in the Caribbean Sea, when a vessel also on its way to Baltimore, was forced to stop here and discharge for repairs. I then analyzed and described (in *Silliman's American Journal of Science*) this species, under the name of Pyroclasite, as a substance unknown to science. This name was applied from its property of flying to pieces when strongly heated. The nodular phosphates of South Carolina, for the most part, belong to the same species; though they are rarely as rich in phosphate of lime as the mineral from the Musquito coast.

Guanape is a small island, scarcely two miles in diameter, but with an elevation of over one thousand feet above the sea, situated upwards of 400 miles to the northeast of the Chincha Islands, in lat. 8° 25′ S., and long. 79° 25′ W. Many thousand Coolies are there employed, under agents of the Peruvian Government, in digging and loading the guano; and, already, hundreds of ships find constant employment in its transportation to various quarters of the globe. Charleston will take a deeper interest in this production, as it is understood that arrangements are in view for its shipment direct to this port. Should this come to pass, it will form very largely the ammoniacal constituent of our artificial fertilizers; as nothing could be better adapted to the purpose, when employed as a mixture with the South Carolina Phosphates, in the ratio of one part of the former to three of the latter.

The present cargo consisted of about 900 tons, and was quite uniform in its character. Two commercial analyses, made from different parts of the cargo, by Prof. Charles U. Shepard, Jr., State Inspector of Fertilizers, gave the following results:

	(1.)	(2.)
Water	27.75	23.10
Organic Matter	35.48	38.53
Ammonia, (N. H.^{3})	10.08	10.22
Phosphoric Acid	14.80	16.13
Bone Phosphate of Lime	32.31	35.21
Sand	1.53	1.46

It hence appears that the Guanape guano does not differ essentially from that of the Chincha group generally.

Without carrying farther the comparison between the Guanape and the Chincha productions, I proceed to state a few chemical and mineralogical observations I have been able to make upon the present cargo.

The efflux of ammoniacal fumes is pungent on exposure to the air. The ammonia, however, does not chiefly proceed from the spontaneous decomposition of the already-formed carbonate of ammonia, or from nitrogenized compounds, (guanine, guanadine, uric acid, etc., which form a large part of the guano,) but largely from the phosphate of ammonia, whereby this salt becomes a biphosphate, and also from certain double salts, into whose composition the sulphate of ammonia enters.

An aqueous solution of the guano reäcts as an acid, partly from oxalic acid, and partly from the presence of biphosphate of ammonia; so that the solution froths for some time, like freshly-opened ale or porter; after which it is neutral to test-paper.

One of the most interesting crystalline minerals found in this guano has not before attracted attention. It occurs in irregular balls and veins, often an inch or more in thickness, having somewhat the appearance of the red Cheshire rock-salt, with this difference, that the cleavage (which is easy) is not cubical, but rhombic. Its hardness is between that of salt and talc. Specific gravity, 2.3. It requires between four and five parts of water at 60° F. for solution. Taste bitter and saline. It is composed of

Sulphate of Potash	67.75
Sulphate of Ammonia	27.88
Oxalate of Ammonia	3.75
	99.38

It loses ammonia slightly on exposure to the air, and becomes of a lighter color. Heated to redness, it evolves the sulphate of ammonia, accompanied by other changes, leaving a residue of about 70 per cent. of a slightly acid sulphate of potash. I have named the substance *Guanapite*, from its locality.

Another equally curious and novel substance was found, in a few examples only, in the cargo, as a pseudomorph of a bird's egg, having the size and shape of that of the domestic duck. They are called fossil eggs at the island. Exteriorly, they are white; and seem to retain portions of the original shell; but these, when scaled off and tested, seemed to be a mixture of the oxalate and phosphate of lime. Within, the substance is foliated, easily cleavable, with

a rhombic cleavage. Color, cream-white; lustre, somewhat pearly; feebly translucent; hardness, below that of salt; specific gravity, 1.5[8]. When heated, swells up, turns black at first, partially fuses, giving off copious fumes of ammonia, and leaving a white residue of sulphate of potash. It is composed of

Sulphate of Potash	40.20
Oxalate of Ammonia	29.57
Water	30.46
	100.23

This substance may be called *Guanoxalite*, in allusion to its composition.

Where remains of bird skeletons exist in the guano, we find, especially in the cavities of the spinal column, the cranium and the stomach, another compound, in yellow crystals, which retain their color and lustre in the air. It is, also, composed of the sulphates of potash and ammonia; but in different proportions from the Guanapite above described. It was first noticed in guano from the Chincha's; and named Taylorite, by Prof. Dana, after its discoverer.

In connexion with the Taylorite occur, rather abundantly, minute, transparent scaly crystals of pure sulphate of potash, (Aphthitalite.) Also, oxalate of ammonia in very delicate but perfect crystals, which, as it has not been recognized before as a natural substance, may receive the name of *Oxammite.*

The shrivelled skins and intestinal membranes are likewise coated, occasionally, with crystalline masses of stercorite, (the double phosphate of soda and ammonia.) Crystals of oxalate of lime (oxacalcite) are very rarely recognized, attached by a point to thin shreds of animal membrane.

The bony remains of birds and seals, on exposure to the air, become rapidly coated with stellar groups of crystals of phosphate of ammonia, (Phosphammite,) and these, by longer exposure to the atmosphere, effloresce and become acid from the loss of ammonia, thereby giving rise to the biphosphate of ammonia (*Biphosphammite.*)

In addition to the foregoing salts, considerable lumps of almost transparent phosphammite occur among this guano. These, on exposure, diffuse ammonia, and have their surfaces coated by a white, powdery biphosphammite.

I have made no general analyses with a view to determine the per centage of the sulphates, or the proportionate quantities of potash and soda; but they must be small, when compared even with the soluble phosphates. It is apparent, however, that potash is vastly more abundant than soda; and that all the soluble salts together fall considerably below the quantity of insoluble bone phosphate. It is also obvious that the prevalence of acids is, on the whole, so great as to restrain within very narrow limits the escape of ammonia in the handling of the material; and, after a proper incorporation with our artificial superphosphates, its loss must be hindered altogether.

CHARLES UPHAM SHEPARD, Sr.

Laboratory of the Medical College, Charleston, April 8, 1870.

Manures.

Agriculture was coëval with the fixed property and settled habitations of man, which usually followed, although they sometimes accompanied the pastoral life. According to the Bible, Cain, the first born of woman, was a "tiller of the ground." Noah, considered the second progenitor of the race, on departing from the ark, "began to be a husbandman."

The Egyptians ascribed the invention of agriculture to supernatural power, and worshipped the ox, in reward for his labor, and as symbolic of the art. Moses ordered, "Thou shalt not plow with an ox and an ass together." Job spoke of those "that plow in iniquity." And Isaiah, of beating "swords into plowshares, and spears into pruning hooks." Among many Greek authors, at various periods, on husbandry—Hesiod, in the age of Homer, perhaps—gave a poem in which allusions were made to the cart (ox?) with low wheels; to the rake, and other implements of the farm. Xenophon made a discourse on rural economy, and Theophrastus, the "divine speaker," the philosopher, wrote nine volumes on the "History of Plants." and is regarded the father of botany. He also described six principal manures to be applied, but suggested, as a good substitute, the mixture of earths—as of clay and sand. About the same period Mago, a renowned Carthagenian, published twenty-eight books on agricultural topics, held in such esteem that they were translated from the Punic into both the Greek and Latin languages.

Eminent in arms and jurisprudence, the Romans attained equal excellence in the practice of husbandry. It was esteemed the highest of the liberal employments. Those tribes living without the city, and cultivating their patrimonial acres, were deemed the most honorable. From these sprang such men as Camillus and Cincinnatus. Some of the proudest, and historically the most celebrated families, assumed the names of plants, in whose cultivation the founder, or at least an ancestor, had shown distinguished skill, as the Lentulii from the lentil—the Fabii from *faba*, a bean, and Cicero from *cicer*, a vetch. In his Georgics, Virgil is familiar with the entire round of agricultural operations; and gives directions in plowing, planting, fallowing, irrigating, and enriching the land with animal manures and with ashes. Columella, in twelve books, furnished a complete treatise on rural affairs. Their implements, including the Coulter, and the single and double mould-board plows, were not dissimilar to those employed during many subsequent centuries. Their sources of manures were as various and as numerous, and, probably, were as judiciously applied as those of the moderns up to the eighteenth century. Then, as even now, pigeon manures, (poultry,) night soil and human urine, mixed with the sweepings of the streets, were regarded as among the best. The signal advantages of recent times consist in the new and constantly renewing machinery of a thousand kinds, adapted and being adapted to every branch of agriculture, and to a better knowledge of chemistry, which supplies a magic key to the vast storehouses of nature; by analysis unlocking the embraces of many compound substances, which, in

other days, were supposed to be simple elements, and by the process of affinity applied synthetically, uniting materials for the largest vegetable yield of which the earth is capable.

During long centuries of anarchy and wars, agriculture was neglected; its practices measurably forgotten; the pastoral was partially resumed, because property in stock could more easily be secured on the approach of an enemy. Its principles, or rather its precepts, were, in a degree, preserved everywhere by the priesthood around their monasteries.

The Norman conquest of England gave an impulse to the half-perished art, for many bold barons were distinguished husbandmen, and the Flemish immigrants aided with their better implements, and their industrious habits. It revived rapidly in the reign of Henry VIII, when the first English book on the subject, by Fitzherbert, appeared, recommending draining, fallowing, and manuring with lime and marl.

Early in the eighteenth century, Jethro Tull, a noted Berkshire farmer, introduced, if he did not invent, the drill system, and applied it to wheat, potatoes and turnips. In time it proved a decided success. Turnips carried from Flanders produced a revolution in husbandry. They added so largely to the provender for cattle, supplied by the grasses, that their cultivation became almost universal, and an era dated for the increase and improvement of all breeds of stock. The influence of the plan of drilling the seed materially heightened this effect. But Jethro Tull, eccentric in part of his practice, in his "Horse Hoe Husbandry," denounced all manures, and insisted on substituting for them additional tillage. In the reign of George III, the two-horse plow superseded those of four and six horses. Subsequently the reaping and threshing machines were employed; the system of draining began, and Mr. Deanston, of Scotland, invented the subsoil plow. Books innumerable were written on all branches of agriculture, among the most valuable of which, and still maintaining their high repute, are London's Encyclopedias. Science enlightened art, and the art, by both successful and unsuccessful experiment, furnished basis for the advancement of science. At present, the press, in all countries, teems with agricultural literature. The genius of invention is quickened by the wonders which its own efforts have achieved. Chemistry, with striving energy, is unveiling the arcana of nature. A fertilizer from a distant sea, known and partially used for ages on its barren coasts, but, until recently, unnoticed and neglected by more enterprising peoples, has wonderfully accelerated the wheels of agricultural progress, and constitutes manuring, in all its phases, one of the grand events of this remarkable epoch.

Beech Island, S. C.

In some places at the North farmers are inquiring what to do with the Irish potatoes. The crop this year is undoubtedly large, but especially in view of the short crop of corn it would seem good use might be found for all. They can be used freely as food both for the family and the stock.

Agriculture in Mississippi.

If the word *alluvial* necessarily implied fertility, the State of Mississippi would be, agriculturally, the planter's Eden; for the whole State, from the Tennessee line to the Gulf, seems to be one vast alluvial deposit. But occasional forests of stinted trees, and the waving fields of broom-sedge, are standing proofs of the sterility of certain sections of the State.

The splendid pine timber of South Mississippi is a source of greater revenue to the planters than their products of the soil. Millions of feet of lumber are annually shipped abroad, and especially to California. This trade was very brisk during the building of the great Pacific Railroad.

Turpentine, too, is manufactured extensively, and in a manner worthy of note. The tree is cut down and sawed up into blocks; these blocks are put into large cylindrical cauldrons, called baskets, which are built into furnaces that have spiral flues encircling them; the heat from these flues forces the resinous sap from the pores of the wood, and leaves a dry block of seasoned wood to be rived up into shingles, staves or something else.

The longitudinal centre of the remaining portion of the State is not so fertile as either the eastern or western sections. And yet, as I have said, it is all alluvial. At Canton, twenty-five miles above Jackson, I saw shells, very much like the oyster-shell of the present day, that had been taken from a well seventy feet deep. All along the northern line of the State shells are found; and, in the vicinity of Corinth, they are in sufficient purity to be burned for lime. And all over the State marl deposits underlie and crop out upon the surface-soils. Some of these marls, too, seem to be productive, and others barren. The chalk-marl, clay-marl, sea-marl, fresh-water marl, rotten limestone, sandstone, and their kindred deposits, all lie beneath a universal mud that sticks the boots off a man's feet and the hair off an animal's legs. Nowhere have I seen the red clay of South Carolina, nor the famous granite boulders so common there.

The prairie lands in the upper eastern half of the State are the most attractive in the South, though they do not yield so abundantly now as of yore. This is more attributable, I imagine, to the system of culture than the quality of the land. The soil in these lands varies from one to ten or even twenty feet deep, and the subsoil or substratum is a rotten limestone, called "joint clay" when it crops out of the ground, and though dark blue or gray when first exposed, often bleaches white, and makes valuable whitewashing and plastering material. I suppose these lands have in them a sufficiency of lime to become hard when made into a mortar, and hence the continued trampling and shallow plowing in wet weather, has so run the top soil together that, a few inches below the surface, a hard pan of plaster is formed, which, being never broken by the plow, prevents the water sinking, and hence the soil becomes sour, and the crops are diminished. I have often seen, this spring, two mules straining to draw through this sticky mud a great

heavy plow, and, upon examination, found the depth of furrow to be about four inches. Half the strain of the team was expended in engineering itself through the mud. Such treatment will kill both land and mules, and has sickened the former, for smaller crops are annually grown, and fruit trees refuse to thrive in these soured mortar-beds.

Planters in that section will pardon the impertinent suggestion to underdrain and plow deeper, but not when the water furrows of yesterday are this morning full of water, though no rain has fallen. Turning-plows, with wooden mould-boards, are the kinds almost universally used, and are said to be preferable to any iron or steel mould-boards. I observed the same were used in similar lands in Alabama.

Perhaps no body of land is richer than the Yazoo Delta, which lies between the Mississippi River on the west, and the Yazoo and Tallahatchie on the east, and contains about 4,000,000 acres of land. This territory, capable of sustaining as many inhabitants as it has acres, seems destined to be the ultimate home of the negro during his future sojourn here amongst the Anglo-Saxon race. In 1866, there were 10,000 whites and 40,000 blacks in this Delta, and annually the whites are said to be diminishing and the blacks increasing.

A few statistics may not be uninteresting to our readers just here. In 1859 and 1860, the cotton crop of the United States was 4,675,770 bales. Of this number Mississippi produced 1,202,050, or something more than one-fourth of the entire crop. This State has sixty counties, covering an area of 47,000 square miles ; six of these counties, one-tenth the number, with an area of 4,700 square miles, or one-tenth the area, viz: Hindes, Lowndes, Madison, Marshall, Noxabee, and Yazoo, in 1859 and 1860, produced 320,765 bales of cotton, or one-fourth the crop of Mississippi, and one-fifteenth of the whole of the largest crop of cotton ever grown in the United States. And of these six counties, Yazoo alone, with an area of 1,068 square miles, and a population of 22,373 white and black, produced 64,075 bales; nearly three bales to every man, woman and child in the county, and about one seventy-eighth of the whole cotton crop of the country.

What has been done, can be done again, and will be, as surely as labor can be procured. Then, if this mighty valley succeeds in introducing an improved labor, who will venture to estimate the quantity of cotton to be made here in a few more years? And, with these thoughts and figures before us, does it not become the old and less fertile States to diversify their pursuits?

The efforts now being made to introduce foreign labor into the State are but the source from which will flow, at no distant day, a mighty stream of immigration. During the past winter 1,400 foreign laborers have entered the State through the Mobile and Ohio Railroad, and over 2,000 through other channels. And in every village I have seen daily arrivals, and some of them an improved class of immigrants, educated men and women in families. The existing negro labor is almost valueless; less reliable and more demoralized than the same labor in South Carolina. While travelling in Georgia and

Alabama, I saw great numbers of negroes coming West; all saying they were coming to Mississippi. In Mississippi I am unable to see where they have gone. They appear simply to have melted away. Thousands of acres of fine land are uncultivated, and on all sides labor is reported scarce. Indeed, such is the demand for labor, that in several places I have known planters to underbid each other in renting their lands to negroes. Often he pays one and a half bales for the use of ten acres of land; he will, probably, make three, four or five. No extraordinary culture would produce ten bales on the same area.

The general system of contracts seem to be for a share of the crop; the planter furnishes the land, mules, (and feeds them,) and the tools; the negro furnishes the labor and feeds himself; they divide the crop equally. The general crop is about a good half; hence the planter gets for the use of his land and mules about one-fourth the produce *he could* raise off the plantation, and is, consequently, impoverishing himself annually.

No efforts are anywhere made to destroy this industrial supremacy, or rather this control, which ignorant brute force has over the intelligence of the State, save by immigration societies. Nowhere is small grain resorted to; and yet thousands of bushels might be grown where none is ever seen. On every plantation that I visited on the Mississippi River, white clover was growing by the 15th of March from four to eight inches high, and in many places I saw lucerne eighteen inches high, the spontaneous growth of the country. Near Grenada, Okalona, and in Columbus, I saw lovely patches of red clover; and yet all over the State I met car loads of Chicago hay, costing, delivered in Mississippi, from thirty to thirty-five dollars per ton. Twenty dollars' worth of labor properly applied to any acre of arable land in the State, will produce seventy-five dollars' worth of hay equally as nutritious.

If homestead laws have any virtue in them, Mississippi enjoys it. The planter is entitled to an exemption of 240 acres of land, or $4,000 worth of real and personal property, and one year's supply of provisions for his family and stock, together with all his household furniture. If he dies it descends to his wife and children. If the widow marries the exemption goes to the children. The head of the family may sell the homestead exemption, and the property so sold is exempt from execution, but the money must be reinvested within one year from day of sale.

Meridian, Miss., April 10. D. WYATT AIKEN.

Cultivation of the Peanut.

The peanut requires clean culture. For the first month after planting its growth is very slow, not making much increase in size until warm weather fully sets in; and, by the time of the first weeding, the farmer need not be surprised to find more grass than peas; but never mind, go in with a one-horse cultivator, if you prefer it, and run as near the vines as you can without

covering them, so as to leave as little as possible for the hoe to do. Instead of the cultivator many use a small turn plow, and I think the plow the better for the first weeding. Follow the plow with hoes and remove all grass and large clods from around the vines, and leave the soil loose and mellow. This first stirring of the soil, if thoroughly done, will have an almost magical effect upon the young plants. Their growth will be rapid from this time forward. The grass will be pretty apt to grow rapidly too. Some grumblers think that grass grows faster than anything else. Well, we all expect it to grow. Let it grow. Strong arms and willing hearts never fear grass. In twelve or fifteen days from first weeding it will be time to start again. Large growers start immediately over the second time as soon as done the first time, as the first worked will by that time be grassy enough to weed again. This time use the cultivator. If the vines have made a good growth since the first weeding, the hoes will not get over this time quite as soon—but nearly—as at the first, as all grass just around the vines must be removed by hand. And if you have careless or lazy hands, you must take care that they do not cut up the vines in attempting to remove the grass with the hoe. Lazy hands won't bend their backs to pick grass if they can help it. It is very necessary, however, that nothing else should grow among or near the vines. Do your duty faithfully, farmer, in this particular, and the peanut will certainly pay you.

In due time give your crop the third plowing and weeding, and this time you must be particularly careful not to injure the vines either with the plow or the hoe. Run one time between the rows with a very small cultivator, or, if you find this won't answer, with a large shovel plow with wings. The hoes will now get on slowly if your crop is grassy. Much must be pulled by hand. It will not do to put the hoes near the tap-roots, as the stems, and some peas by this time, have started, and every one that is cut is a pea lost. This is the last regular weeding, so let it be well done. The end will bring you to the 1st of August, after which you may lie by in the shade, if you have nothing else to do, and quietly survey at your leisure the beautiful green carpet that now covers your land. And here now we will leave you to contemplate the work of your hands, or quietly build your ideal cottages whose foundations are laid in PEANUTS.

Bacon's Castle, Surry, Va. B. W. JONES.

An Experiment with Rice Sown Broadcast.

An article in the March number of THE RURAL CAROLINIAN, on "Rice Culture upon River Lands," reminded me of an experiment made by me with rice sown broadcast in my mill-pond.

Having first staked off my pond to enable me to sow the grain regularly, I took two hands with me in a bateau—one to paddle, and the other to sow the seed—and in about three hours the work was done, having sown, as nearly as I could guess, about six acres of good ground. There was a larger

area sown, but there were many spots in the pond which made nothing at all, and other places very little, in consequence of the growth of injurious grasses and weeds.

The quantity of seed sown was about eight or nine bushels, and from one to two bushels per acre. The yield was three hundred bushels, or an average of about fifty bushels to the acre.

On one spot where the rice was good, though not the best, I laid off the tenth of an acre, (sixty-six feet square,) and having carefully cut, cleaned and measured the grain, I found the yield to be nine bushels and one peck, or ninety-two and one-half bushels per acre.

This, it will be borne in mind, was sown broadcast upon the water. After continuing the water on the seed eight or ten days, I let it off for the rice to come up. Every week thereafter I would throw the water on again for a few days, that I might run my mill a day in each week, until some time in July, when I threw the water off entirely. The only flooding it got after that time was from heavy rains; one very heavy rain having entirely submerged the rice after it had headed without any appreciable effect.

You will thus perceive that the only expense of the entire crop until harvesting, (except an acre drilled,) was the cost of seed, and the work of two hands about three hours in planting.

After the rice had attained more than half its height, I cut a small portion of it, and fed it to my stock green. It afterwards grew out almost or quite as rapidly as millet, making as fine rice as any of the surrounding grain. From this experiment, I have no doubt I might have done the whole crop so without injury to the yield, thus securing a large amount of excellent hay in addition to the rice crop. SAMUEL G. HENRY.

My Method of Cultivating Corn.

My corn land is a light, sandy loam, with clay subsoil from six inches to three feet from surface. It has been in cultivation, it is said, over one hundred years; said to have been worn out fifty years ago, and almost worthless; averaging about seven bushels per acre, without manure, under the old method of cultivation. I state the kind and quality of my land, as the mode of culture must be modified to suit the different soils.

I divide my corn land into two equal parts, so that one-half is rested every year. I do not plant corn on the same land two consecutive years. About the last of September or first of October, I break up my rested land with a good two-horse turning plow, running from seven to eight inches deep, turning under all vegetable matter on the land, thereby laying up stores of food for the plant of the next crop. No vegetable matter on the land should be burned if it can be avoided.

The No. 2 Brindly is my favorite plow; it does its work well. A good plowman can break up two acres per day. In land that has not been broken

deep, the subsoil plow should be run in every other furrow, following the turning plow.

About the 15th of February I lay off my corn rows with a shovel plow, seven feet apart. I then haul out my cotton seed, carefully putting down twelve heaps to the acre, each heap containing two bushels, or twenty-four bushels per acre. This year I shall put thirty bushels, or fifteen heaps of two bushels per acre. Then, with a No. 1 Brindly, I run the second time in the furrow, opening it about six inches deep. In this furrow I sow my cotton seed as equally as possible. My experience teaches me sowing along the furrow to be better than putting it in heaps beside the corn. I do not kill my cotton seed before putting it down for manure. One bushel of live cotton seed is worth, for manuring purposes, three bushels that has been killed and allowed to rot in the open air.

I leave my cotton seed exposed in the furrow until I am ready to plant, which is about the 15th of March. I give my plowman his horse, one bushel of corn, and a Sinclair Corn Planter, and he will plant from ten to twelve acres per day.

This machine runs one-inch below the cotton seed, planting the corn two grains in a hill, three feet apart. It can be set to plant nine, eighteen, thirty-six inches, or in drill. With a fourteen-inch sweep, wings turned up well, a plowman follows the planter, running on one side of each furrow, covering cotton seed from two to three inches deep, but not filling up the furrow. In using stable manure, I open as for cotton seed, hauling the manure when ready to plant. I first plant corn with machine one inch below bottom of furrow, then sow manure, and then cover as before. When the corn is well up, I run close it with a twenty-two-inch sweep, wings flat, putting enough earth to cover up all grass and weeds, and then finishing out middles with the same sweep. I then follow with hoes, removing any grass or weeds which may have been left, and thin the corn to one stalk in a hill; replant if necessary—the stand, however, is generally good. When the planter is used there is seldom any need of replanting.

The second working is done in twelve or fifteen days, by running near the corn with a twenty-two-inch sweep, right wing turned up, in order to give the corn some earth, and cover up grass and weeds—middles finished with sweep, wings flat. The third plowing is down in twelve or fifteen days, in same manner as second working. In this working I follow with the planter, running in the middle of each row, planting peas three feet apart, from five to six grains in hill, and about one and a half inches deep. Can plant twelve acres per day.

Fourth and last working is done in about twelve days, or as soon as the peas are well up, by running sweep, right wing to cover, giving it earth enough to cover grass, returning in same furrow, right wing to peas, giving them a small bed. This ends the cultivation.

One hand can prepare, plant and cultivate well, forty acres easy. My crops, for the last three years, cultivated as above, has averaged twenty bushels of

corn per acre, with an abundance of fodder. Last July, when the crops were suffering severely from excessive heat and drouths, my corn remained green to the bottom leaf, making the best crop I ever made; every stalk having at least one heavy ear, while a majority had two. If the planters of our country would drain their lands properly, break up deep, manure well, and cultivate shallow and thoroughly, we should hear less of bad seasons and short crops. Sir, do you not believe that farmers can put their lands in such a condition that will, in a great measure, make them independent of wet and dry seasons?

W. F. BARTON.

March 29th, 1870.

Department of Horticulture and Rural Art.

Asparagus and its Culture.

The asparagus is a native of the sea-coast of Great Britain and other countries of Europe and Asia, and has become naturalized, to some extent, in this country, being found here and there growing wild on the beaches and marshes of our coasts.

Select for an asparagus-bed a warm exposure, free from the shade or the roots of trees and shrubs. The best soil is a rich sandy loam. If it be clayey or gravelly, it should be removed to the depth of eighteen inches or more, and its place supplied by a mixture of light mould and sand, the sand predominating. Manure *very heavily*, digging in and thoroughly mixing the manure to the full depth of the bed. Salt should be added at the rate of from fifty to one hundred pounds to the square rod. Having thoroughly pulverized and levelled the ground, lay it off into beds four feet wide, with alleys two feet wide between them.

Plants one year old are to be preferred for planting, and they should be set out as early in the season as the condition of the soil will permit. Where convenient, these plants may be procured from a nursery; but they are readily grown as follows: Let your seed-bed be a rich, light soil, well manured. Sow quite early in the spring—in February, in the latitude of Charleston—in drills one foot apart. Scatter the seeds rather thinly in the drills, and cover one and a half inches in depth. Thin out the plants to from four to six inches apart, and keep the bed light and free from weeds. When the stems are withered, in the fall, cut them down and spread well-rotted manure over the bed to the depth of one or two inches. Remove the plants to the permanent bed the next spring.

Another plan, and we think a good one, is to sow the seed where the plants are to remain. In this case, the soil should be removed to the depth of about three inches, the seed sown in drills and covered with a very rich, mellow soil, prepared for the purpose. When the plants are two or three inches high, they should be thinned out to one foot apart. Treat them as directed for the seed-bed, covering with manure in the autumn. The rows, whether planted in this way or with plants from the seed-bed, should be eight inches from the edges of the beds and sixteen inches apart, making three rows to each four-foot bed. In the spring of the second year, stir the ground thoroughly, being careful not to injure the plants, and cultivate during the summer as before. In the autumn of this second year, the plants should have a top-dressing, consisting of the soil previously removed, with sufficient well-digested compost added to cover the crowns of the roots five or six inches in depth. The next spring, or the latter part of winter, give the bed another dressing of manure—three or four inches—covered with an inch of charcoal-dust, if you have it at command, forking the whole in before growth commences in the spring, and being particularly careful not to injure the crowns of the plants. Another top-dressing of salt will now be useful. When the shoots appear, you may cut sparingly for use. The yearly top dressing and the forking over of the ground must be continued while the bed lasts. Use a spading-fork, and not an ordinary spade.

Where the plants are transferred from the seed-bed to the permanent bed, the after culture is the same, except that no top-dressing of soil is necessary the next autumn, as the plants should be set in trenches seven or eight inches deep, and covered so that the crown will be one and a half inches below the surface of the ground in the trench, which is gradually filled up as the shoots grow, giving sufficient depth to the roots.

The stalks should be cut down and removed every fall. If young plants from scattered berries make their appearance, they should be treated like any other weeds.

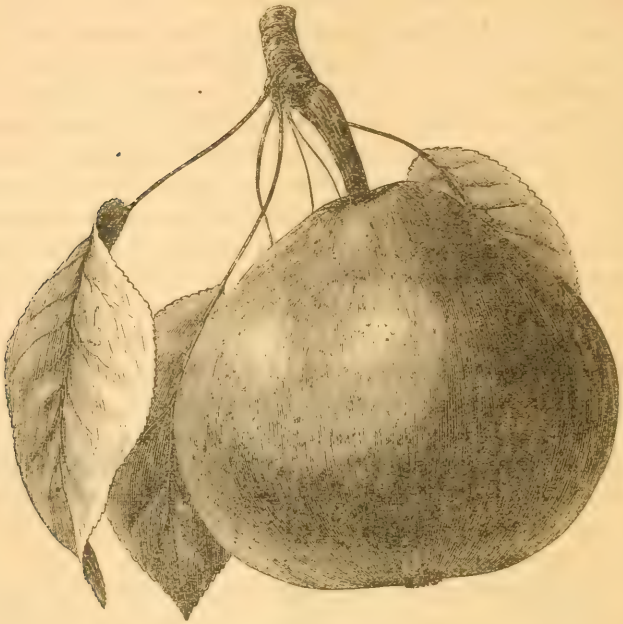
The third year from the seed, or the second from the transplanting, a full crop may be counted upon under good management, but the gathering must not be prolonged too late. A good rule is to let the asparagus bed rest as soon as green peas become plentiful.

Cut when about four or five inches above the surface. The shoots should be cut off slantingly about three inches below the surface, using a long, sharp-pointed knife.

Beds will last at least twenty years and probably more; and, in spite of the trouble of getting it under way, asparagus is one of the most economical as well as the most productive of vegetables. The best variety is *Conover's Colossal.*

To cook, boil from twenty minutes to half an hour, and serve on toasted bread with melted butter; or cut the tender parts into small pieces, cook and serve as green peas.

Duchesse de Berri Pear.



Though not a new pear, this is one so little known as to deserve a place among the novelties on our fruit lists, especially as it is better than many that are oftener mentioned. Fruit, small, oblate, obscurely pyriform. Skin, yellow, shaded with light red. Stalk, short, inserted in a small cavity. Calyx, partially open, set in a broad shallow basin. Flesh, juicy, melting, with a good vinous flavor.

Plants which Should be Better Known.

1. *Martynia.*—This plant is an ornamental as well as a useful one, and is found on the florists' catalogues as a candidate for a place in the flower-garden or lawn. It is also a desirable vegetable, and it is as such that we wish here to call attention to it.

It is a hardy, annual plant, with a strong, branching stem, large, heart-shaped leaves, and handsome, bell-shaped flowers. When bruised, or roughly handled, it emits a peculiar musk-like odor. The seed-pods are succu-

lent, fleshy and tender while young, in which condition they make excellent pickles—not inferior, in our estimation, to the cucumber.

The martynia is easy of cultivation. Plant in the spring, in good ground, three feet apart, and keep the ground free from weeds. The pods are produced in great abundance, and should be gathered when about half grown, and pickled at once.

Strawberry Tomato.—This is the name under which the *Physalis Alkekengi*, (or *P. Edulis*,) is usually found on the seedsmens' catalogues. It is, however, only distantly related to the tomato, and is a plant of different appearance and habits. It is a hardy annual, with a low branching head, large triangular leaves and solitary yellow flowers. The fruit, which is yellow and semi-transparent, is inclosed in the inflated calyx, which drops off with the berry at maturity. The fruit is about half an inch in diameter. The flavor may be described as a combination of those of the strawberry and the tomato. Tastes differ, and some may not like it; but we prefer it to the tomato, either raw or cooked. It makes delicious pies, and is excellent simply stewed and sweetened.

Sow in a seed-bed, any time from January to June, but the earlier the better, as it takes a long time for the seeds to germinate. Transplant into rich, well-prepared ground, two or two and a half feet apart, and keep free from weeds. The plants will cover the ground, and continue to bear the whole season, unless killed by severe drouth.

"Experience is the Best School for Fools to Learn in."

The lessons taught by experience are not always the most pleasant, but they are apt to be more impressive. It has just occurred to me that my experience in fruit-growing might be beneficial to some of my enthusiastic young friends who are just entering the field.

Some thirty years ago I bought a plantation, and began about as enthusiastically as the author of "Talpa" to reform abuses.

An old gentleman said to me, "Let me give you a piece of advice—the first thing you do, plant an orchard." He very kindly ordered from a nurseryman a select lot of apple trees, and I planted them "*secundum artem.*" They grew off finely and promised well. The next winter we had a big snow, and after the snow melted, to my surprise I found the rabbits had girdled every tree so thoroughly that they were worthless. There ended experiment No. 1.

Not long afterwards a wagoner passed through my neighborhood from Mock's Nursery, North Carolina, loaded with apple trees. I bought a select lot of very healthy looking young trees, and planted them with a great deal of care. The man told me to make a plaster of lime and soft soap, and apply it to the trees from the ground up to the limbs. I did so; it killed several of the trees and excoriated the rest so badly that I found it necessary to clean them often, and wrap them up. It kept off the rabbits—so far the

fellow was right, and may be my soap and lime were too strong. About this time my trees began to bear fruit, the borer struck me—and it is a little singular that he seldom troubles a tree until it begins to fruit. Is there anything peculiarly attractive in the juices at that period? Well, I went to work according to the book, with knife and wire; I heaped up clay around the trunk, I scraped away the earth, I mulched, I put salt, and ashes, and lime about the roots, and rubbed it on the trunk; I washed the tree with a strong solution of aloes, an infallible French prescription, but all to no purpose—the borer when attacked at the ground took to branches, and kept up his work persistently. The orchard was, in the meantime, cultivated in potatoes and peas, and occasionally sowed down to oats, barley or rye, for pasture. The trees which escaped grew finely and bore well.

One day, when at a considerable distance from my orchard, I was puzzled by the sight of some moving body, which seemed suspended from the branches; upon riding nearer I found it was a flock of goats amusing themselves in the art of decortication. I took the hint, and wrote down N. B. Goats *vs.* Orchards.

I discovered, about this time, that the side of the tree next to the sun was generally the part diseased, and the part most apt to be attacked by the borer, and the best protection against sunstroke in summer or rabbits in winter, was to tie snugly a wisp of broom-straw around the trunk. The straw should be changed once or twice a year, to guard against its becoming a nidus for insects.

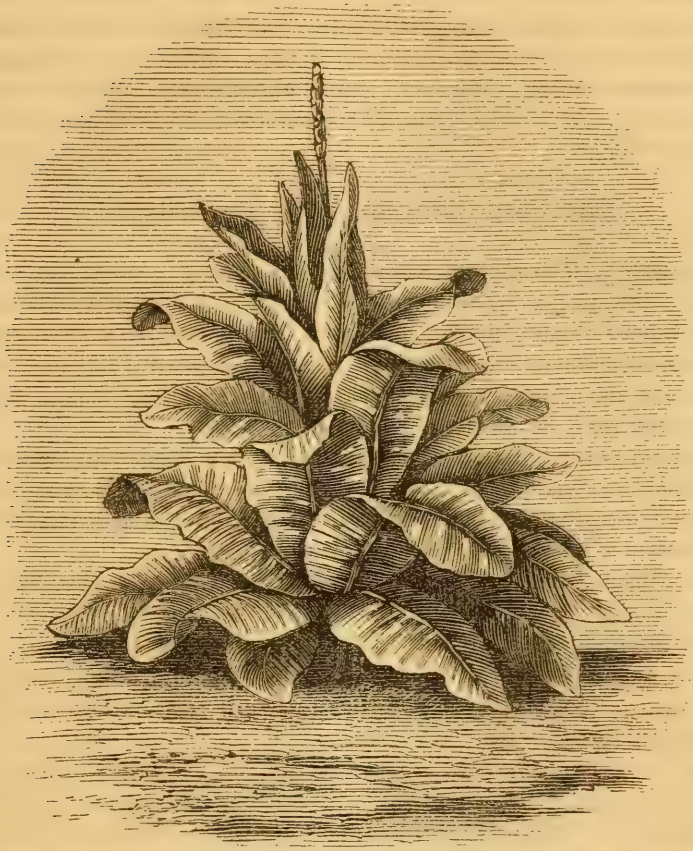
I have found a good whitewash (of lime and salt) every spring, beneficial to the trees, and I am satisfied that every orchard should be (when in bearing) always accessible to hogs and poultry; and, if cultivated, no crop should be grown on it but the common cow pea. The birds should be encouraged, likewise—better give them all the cherries than have the insects.

A few years ago, another enemy, or the old one in a new guise, made its appearance in my orchard. I noticed on the limbs of the apple trees a pink-colored wart; upon using the knife I began to suspect it was the work of an insect. I cut off smoothly a good many. Next year, upon examining those which I had left untouched, I found them exfoliated, and black knotty excrescencies in lieu of the pink wart. On cutting into them I found from one to three worms, very like the borer. There is but one remedy—pare off smoothly every pinkish excrescence as soon as you discover it.

Another malady has made its appearance; of late the fruit spurs after blooming luxuriantly in the spring, suddenly dry up and die. And still another. During the two last years a great many apple trees have declined, from the attack of a blight very like that which kills the pear.

An experience of thirty years has taught me that Northern trees are not a safe investment, and will, nine times in ten, bring disappointment by not bearing fruit by the card, and bearing insects and diseases not to the manor born; and that the price of fruit, like another scarce and costly luxury of our time, is eternal vigilance. G.

Flowers in Masses—The Canna.



The Canna (Indian Shot) is a beautiful and a showy plant, and one of the best for massing on a lawn where there is ample space.

The leaves are large, showy and tropical, of all shades of green, and often with purple markings. It is a tall-growing plant, some varieties attaining, in our climate, ten feet in height; the flowers are showy, even in the common variety, (*C. Indica,*) and in some species very beautiful; that of *C. Nepalensis* equals in size and color the Hedychium. All species need a very rich, deep soil, and a warm exposure. It is better to plant roots than seeds, for the latter seldom give large plants the first season.

A fine bed of varieties may be made as follows: *C. Gigantea* in the centre, plants, if large, eighteen inches apart; next, a circle of *C. Limbata*, twelve inches apart; next, *C. Nepalensis*, twelve inches apart, or, if large roots, eighteen inches; next, a double row of *C. Warczewiczii;* close to the grass a broad line of variegated Sweet Alyssum. We have then a dark-green centre with reddish orange flowers—next, light-green foliage with reddish flowers;

next, glaucous green with very showy creamy yellow flowers; then, purple foliage with scarlet flowers, affording a striking contrast with the White Alyssum.

Another bed of equal beauty, and even more effective, where room is not lacking, can be made with the Castor Oil bean, (*Ricinus,*) in its many varieties. This also requires a deep, rich soil, which must be kept moist by mulching or watering. If these conditions be observed, no heat can be too great for these plants.

The Superphosphates on Gardens.

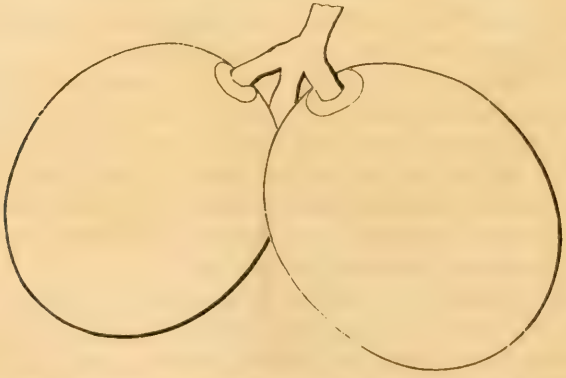
We are asked how to apply the commercial phosphatic manures in gardening.

1. In the first place, do not rely wholly upon any commercial fertilizer for the nourishment of your plants, but make your garden rich with stable manure and strong home-made composts. After this get, if you can, a good and pure article of concentrated manure from a manufacturer or dealer, whom you can trust, and use it as an auxiliary.

2. Apply on garden-beds, already moderately manured with stable manure, and intended for vegetables, at the rate of four quarts to the square rod, mixing it with a wheelbarrow load of compost—spreading broadcast, and digging it in with a spading-fork or a pronged hoe.

3. For beans, sugar corn, squashes, melons, cucumbers, cabbages, tomatoes, etc., apply a large tablespoonful to each hill, mixing it well with the soil before putting in the seed or plant, as in some cases it is not safe to permit it to come, in a mass, in direct contact with them. Some apply one half the quantity they purpose to use at the time of planting and the other half as a top-dressing at the first hoeing.

The Golden Champion Grape.



As a grape to be grown under glass, no new variety is attracting more attention than the Golden Champion, one of the grandest acquisitions of recent years. Its size is enormous, as the accompanying outlines will show.

Free and robust in growth, hardy and prolific in habit, magnificent both in berry and cluster, and exquisite in flavor. It was raised by Mr. W. Thomson, of Dalkeith, some five years since, from a seed taken from a grape that was itself a cross between Champion Hamburgh and Bowood Muscat.

Irish Potatoes—A Fall Crop.

Our correspondent, G. Hunziker, of Summit, Miss., writes to the *Southern Farmer* as follows:

I last year succeeded far over my expectations in raising two crops of the Early Rose potato. I planted the first crop the first week in February, and had the potatoes ripe in the middle of May. Those for seed I put in a dry place. They began to sprout the latter part of July. I planted the 11th of August, and had the potatoes ripe the middle of October. The seed for the second planting must *not be cut*—the whole potato must be planted. I take medium size to small. If the seed for the second planting is cut, they will not come up, the ground in that time being too hot, and decomposition takes place in a short time. In not cutting the seed lies the secret of success in having a full second crop of Irish potatoes.

We should mulch the ground for this crop, if practicable, to secure coolness and moisture, especially if obliged to plant in a light sandy soil.

Variegated Geraniums.

The variegated zonale geraniums form an attractive class of plants for the dwelling and green-house, but in this country but few of them have proved suitable for bedding out.

The *Mountain of Snow*, which we illustrate, proves at least a partial exception. It has a vigorous growth, and retains its variegated foliage well under our hot sun. It is also a desirable potting-plant.

The centre of the leaf is green, with a broad margin of nearly pure white; the plant is a tolerably vigorous grower, and makes a fine display as an edging to beds of plants with dark foliage, such, for instance, as *Coleus Verschaffeltii*.

The silver and gold-leaved geraniums are generally what horticulturists call "sports" of the green varieties. Not infrequently a plant will produce a shoot, the leaves of which are green, margined with white or yellow, and, in some instances, the entire branch will be white. Cuttings are made of these, and in the case of those showing variegation, are rooted without difficulty.

Strawberry Plants from Seed.

The interests of horticulture in general, and of Southern fruit-growing in particular, demand from us some effort to improve the various species of fruit adapted to our climate, by producing new and better varieties, and we are pleased to know that a few among us are zealously engaged in this good work, and will be heard from, in due time, in a way that will give a new impetus to the cultivation of fruits in the South.

Now we want new varieties of the strawberry, originated here, and just suited to our climate and seasons. We have the Wilson, the Triomph de Gand, Longworth's Prolific, and a few others, perhaps, that do finely here, but they are far from being up to the highest standard of excellence. We can produce sweeter, richer, and more highly flavored berries here than at the North. We should fix and perpetuate these good qualities and others in new Southern seedlings. Peabody's Seedling (now seldom heard of, we are sorry to say) has never, to our knowledge, had an equal in *quality*, but it was a poor bearer. We should try now to produce something equal or superior to the Peabody in flavor, and as prolific at least as the Wilson. The way to do it is to plant seeds and carefully test the plants thus produced.

There are various ways of growing seedling strawberry plants, but the best, according to Mr. A. S. Fuller, of *Hearth and Home*, (who has grown and fruited thousands of seedlings, and ought to know,) is the following:

Planting.—Whether the seed are cleansed from the pulp or not, is of slight importance, unless for the purpose of transportation. That the bed should be of light, rich soil, and thoroughly prepared, is obvious.

My method is to take the berries designed to sow, mash and mix with dry sand until the seed are separated from the pulp and from each other, and sow, sand and all, at once on a bed suitably prepared, and even, by raking in, or, what is better, by sifting on one-fourth-inch of fine loam.

Watering and Shading.—Water and shade—these are the conditions inseparable from success. Properly adhered to, the seed comes at once. Any little neglect, any approach to dryness, and the seed refuses to germinate until the fall rains set in, or until the following spring.

Transplanting.—We have abundance of land hereaway, which may be the reason that I have always been more generous toward my plants, commencing with one foot by three, and gradually enlarging the appropriation until now I plant two feet by four. Such will be the latitude given my new crop of seedlings, aiming to give abundant room for the strongest.

My own experience indicates this as the true path of progress—the method most likely to facilitate the production of a type of plants that shall approximate the high ideal strawberry of the future.

Let every strawberry grower, who reads THE RURAL CAROLINIAN, plant a few seeds this spring, take good care of the plants, number and label each, and carefully note the results, and we shall soon have new strawberries, of which we may rightly be proud.

The Value of Weeds.

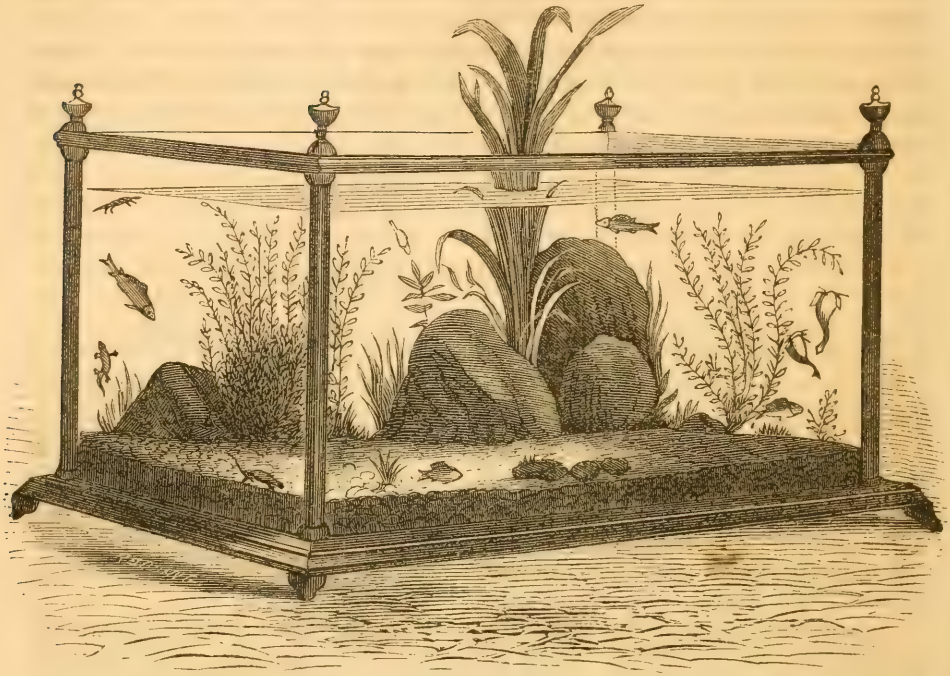
We do not recommend the growing of weeds for profit, but if you have a crop on hand we beg you not to consider it valueless and something to be got rid of in the easiest way, without regard to any use to be made of it. Don't consign weeds to the street or to some out-of-the-way spot, to be dried up and wasted. They constitute an excellent manure. They have taken plant-food from the earth, and they have appropriated fertilizing elements from the air. If returned to the soil, they will have increased, instead of diminishing, its fertility. In garden-culture, the following is a good way to treat them:

Immediately after hoeing, rake all together, and bury them as compactly as possible five or six inches below the surface of the ground. Thus treated, not only are all the benefits derived from green-soiling secured, but, in the fermentation which will follow, the vitality of the seeds contained will generally be destroyed.

LIMA BEANS.—A correspondent of the *Rural New-Yorker* recommends the following method of raising Lima beans: "Take an ordinary nail keg, as near water-tight as possible, bore quarter-inch holes in every third stave an inch from the bottom. Spade and pulverize thoroughly a circle of ground three feet in diameter. Place the keg in the centre, filled nearly full of good stable manure, well pounded in; plant the beans end downwards, two inches deep, eight inches apart, and as many inches from the keg, all around it; pour on a pail of water, or as much as the manure will absorb, which may be repeated once a week in dry weather. Place five or six poles a foot from the keg, letting the tops meet over it, and the work is done. Four hills will be found to raise enough for any family. I have adopted the keg and pole cucumbers, and find it works splendidly, as you can pick them without disturbing the vines."

Stock and Natural History Department.

Water Gardening.



One of the pleasantest of the many pleasant ways in which the natural sciences may be made a means of recreation and a source of health and happiness, is the management of an aquarium, and the study of the phenomena of animal and vegetable life which it constantly presents; and it has the additional advantage of being, in its simplest forms, inexpensive and within everybody's reach. Of course an aquarium may be an extensive and costly affair, constructed and stocked at an expense of many hundred dollars; but the same principle may be carried out, and the same scientific facts illustrated, with scarcely the expenditure of a dollar.

It is well known that when fishes are confined in a small quantity of water the liquid soon becomes unfit for their respiration, and they come to the surface for air, and finally perish. They have absorbed the oxygen contained in the water, and therefore lack one of the essentials of all life, and at the same time have thrown off carbonic acid, and thus poisoned the element in which they are immersed. They are exposed to death therefore from two sources—the presence of a deletereous gas and the absence of an element of vitality.

As long ago as 1778, Ingenhause announced the fact that plants immersed in water, when exposed to the action of light, emit oxygen gas; but it was not till 1850 that this principle was applied to the aquarium. In that year, Mr. Robert Warrington addressed to the Chemical Society of London a series of observations on this subject, in which he explained "the functions assigned to plants for the conversion of carbonic acid gas into oxygen, and the consequent necessity of their presence for the preservation of animal life, which would otherwise, because of the quantity of carbonic acid which it throws off, be poisoned by its own secretions." He reported having placed two small gold fishes in a glass receiver, having first planted, in some earth and sand at the bottom of the vessel, a small plant of valisneria. This simple aquarium worked well for some weeks until the decayed leaves of the valisneria made the water turbid. To remedy this Mr. Warrington, guided by his observation of ponds, introduced into the vessel a few common pond snails. The effect was magical. The snails began immediately to feed upon the decayed vegetable matter, and the water quickly recovered its purity and clearness. In 1852 the same gentleman commenced similar experiments with marine animals and plants in sea-water, and with equal success.

This was the origin of the aquarium. Mr. Gosse soon after published a charming book on the subject, and the keeping of aquaria became a passion with thousands. The furor has died out, of course, but the aquarium is none the less one of the purest sources of recreation and instruction.

The aquarium, then, is a vessel containing water, and stocked with such plants and animals as naturally grow in or inhabit that element. It may be a large rectangular tank with glass sides, as represented in our illustration, or it may be simply an earthen bowl of any size, a glass preserve-dish, a confectioner's glass jar, or an inverted bell-glass. Mr. Humprey's, in his instructive work on "River Gardens," thus describes a bell-glass aquarium in his keeping:

"A common bell-glass, inverted, is mounted upon a turned wooden stand of the simplest design. One of the projecting pieces of rock-work, the highest and driest, has been planted with a small root of fern, belonging to the more dwarf and delicately foliaged kinds; the other has been made the receptacle for a fine tuft of forget-me-not, a plant which never flourishes so luxuriantly as when its roots find their way into the water."

In some aquaria all the sides are of glass, but it is considered better to have the ends, if not the back also, of some opaque substance, such as slate. Whatever your quarium may be, commence the preparation for its living inmates by covering its bottom to the depth of from one to three inches or more, according to its size, with gravel or pebbles. For most water plants, no earth is necessary. They derive their nourishment from the water, and only require an anchorage therein, which the gravel or pebbles will furnish. Next, add pieces of rock, (in proportion to the size of your tank or vessel,) forming as picturesque a rock-work as you can. Shells and bits of coral may be scattered around or grouped about the rocks, but these are scarcely appropriate in the fresh-water aquarium.

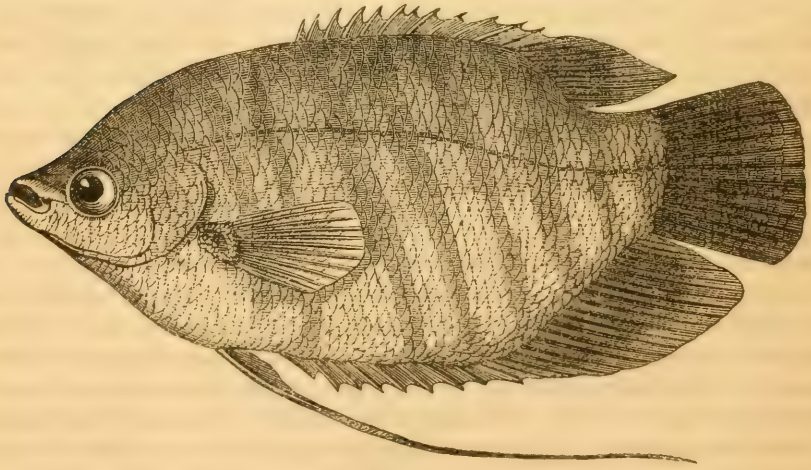
In the selection and grouping of plants, there is room for the display of taste, skill and botanical knowledge. A little experimenting in this way, though likely to lead to some failures, will be interesting and instructive. Where the aquarium is of sufficient size, the *Calla Ethiopica* will thrive finely, and flower as well as in a pot, but it requires strong anchorage in the gravel. The scarlet lobelia, (*L. Cardinalis*,) the sweet flag, the arrowhead, (*Saggittaria sagittifolia*,) and the water plantain, are all adapted to the purpose, where there is room for them; but the best of all plants for the aquarium, and suited to small as well as large ones, is the *Valisneria speralis*, a kind of water grass with long tape-like leaves.

In the selection of the animal inmates, each can again suit his own tastes, and experiment as widely as he may please. Gold and silver fishes are standard stock, but almost any small fish may readily be domesticated in the aquarium, together with water snails, newts, tadpoles, crayfish, fresh-water mussels, etc. The cadis worm and several kinds of fresh-water beetles should be added. The fishes must be small and not too numerous.

Clear spring or river water is best for the aquarium, but well-water will do if allowed to stand awhile before the animals are introduced.

We have here confined ourselves to fresh-water aquaria exclusively. We may, at another time, describe and illustrate the salt-water aquarium, which is, perhaps, equally interesting.

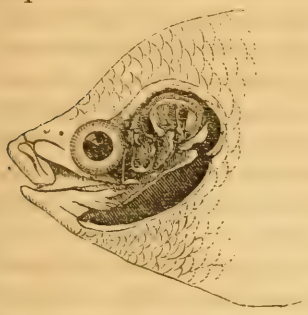
Fish and Fish Culture.



The Gourami.

The Legislature of South Carolina, during the last session, passed an act for the preservation of migratory fish—a measure that commends itself to every citizen of the State. The laws heretofore passed on that subject were disregarded, or not enforced; we now hope that interest will receive the

attention it has so long required, and to which it is justly entitled by its importance.



Head of the Gourami.

If the waters of South Carolina were worked up to their full capacity, for fish alone, they would yield an incomparably larger profit than any equal area under cultivation, and that with less labor, risk or capital. The flooding of impoverished land, temporarily, is often practiced, serving a double purpose, that of raising a crop of fish, and enriching the land. As an article of diet, in some respects, fish surpasses all others. It is said that those who live upon fish possess more vitality than those who eat meat, which is explained by the fact that the former contain free or uncombined phosphorus, which is one of the constituents of the brain of man. Hence the term "Brain-food" is applied to fish. No living organic entity exists without phosphorus, which is essential to all life. As a fertilizer, their value can scarce be overrated.

The eastern limit of the State is laved by the ocean, where migratory fish live the major part of the year. Here they regain flesh and energies exhausted by ascending rivers, frequently, if not always, against current more or less rapid and strong, to their natural spawning grounds, to which they are driven by their instincts for the perpetuation of their species. The conditions appear to be cool aerated water, which mountains supply by the rapids and falls over irregularites of upheaved strata. This valuable endowment of water-wealth, for fish supply, should be appropriated to intelligent use, founded upon knowledge and experience, and protected from reckless abuse and ruin, which can only be done by legislation.

Fish vary in their habits as in the qualities of flesh, size, etc. Some thrive in rapid streams, others seek quiet waters, finding in such conditions food, etc., suited to their several requirements; with either the State is abundantly supplied. Some are never found in salt water, others never out of it. In variety and quality our State is not excelled; and, we may add, too, at one period of our history, and that not very remote, her supplies were incredibly large. If we credit Logan, who has written the early history of the States herring abounded in such numbers as to impede the natural flow of the water. Within the memory of man such fish have not been seen in our waters, and so entirely have they ceased to visit us, that it appears almost problematical if they were ever seen here; at all events, we are tributary to other countries for this fish, which usually accompanies the shad; and the shad, where once common, is never seen now; and, like the herring, will, in a short time, be seen no more, unless the State extends adequate protection, and restocks those streams from which it has been driven.

It is in the rapid sparkling mountain waters that the shad *et omne genus* deposit their eggs, but a very small portion of which produce fish, owing to

the many predatory enemies which prey upon the spawn and the feeble fry. This destruction is so great, that the learned Buffon has said that if one pair of herrings could be protected with their offspring, they would, in twenty years, form a mass of flesh equal to the size of the earth. This statement, coming from so distinguished a naturalist, is suggestive of the necessity for protection, which is not confined to that single fish; all undergo and are liable to similar accidents. The fry when they have gained sufficient strength make their way to the sea, to return to the spot where born, and this would ever recur, with as much certainty as the return of the seasons if not estopped. Unfortunately, our law-makers never valued such resources sufficiently to prevent these welcome visitors from being crushed out, or which comes to the same thing, the laws, if strong enough, were never enforced. Dams and saw-mills have proved to be very destructive. The former by preventing ascent, the latter by sawdust, which gets into the gills and kills. Again salts, such as those of copper and iron, the refuse of gas, and other chemical work, are suffered to flow into streams, which renders them as uninhabitable as the Dead Sea. The streams in Tennessee, near the Ducktown copper mines, once stocked with fish, are now barren. If we felt disposed, endless examples might be adduced in evidence. Such pollutions should receive penal condemnation. Mill-dams have been, from all time, fruitful sources of litigation. No one is justified in barring a public high way because a stream passes through his land, or arresting the circulation of what belongs to the community. In Europe, this is prevented in part by fish ladders, which must have certain dimensions, and be always open, permitting free circulation. Another serious objection to dams, particularly in warm climates, is the malarious diseases which they engender, sometimes whole sections are thus rendered uninhabitable. Such monopolies become nuisances and call for abatement.

There appears to be no doubt about the possibility of changing the habits of fish or domesticating migratory fish to ponds with restricted limits, and without access to salt water. This has been accomplished in Maine with the shad and herring, and in New York with the rock or striped bass. The salmon has also been the subject of much experiment, with what success we are unable to state. Those experiments with which we are familiar offered no difficulty up to a certain age. The fish then became restless, and would exhaust themselves leaping, sometimes landing on the banks to flounder and perish. Its domestication may require perseverance, but its acquisition appears, to say the least, very hopeful.

Independent of those fish which are indigenous to our waters, there are many excellent varieties inhabitants of other rivers on this continent, which may be introduced and domiciled here. Of the salmon tribe there is not less than fifty varieties, distributed from the shores of Maine to those of the northern Pacific, where they abound in surprising numbers. If we credit history, some of the most esteemed fish common to England were introduced by the monks during the dark ages. The gourami, reputed the finest fish

known, is a native of the Mallacas, from whence it was introduced into China, Java, Sumatra, etc. Progress in science has revived this art, and to what extent it may be perfected and developed is beyond prediction. Let us endeavor to get into the current that we may advance with it.

Among our salt-water fish, which are of superior excellence, we may instance the sheep's-head, whiting, rock, drum, etc. The last named, though not so esteemed as others, is by no means inferior. In the hands of a *cordon bleu*, it would vindicate its right to a high position; and its roe, when properly prepared, needs but the pen of a Brillat Savarin, the learned author of the Physiologie du Gout, to give it, as a *bonne bouche*, a world-wide reputation among connoisseurs. The sheep's-head, whether boiled, or *à la creme*, is not a whit inferior to the far-famed turbot. And the rock, with oyster-sauce, or cold *à la homard*, washed down with a glass of our own Scuppernong, is a dish worthy of the gods. Living out of the reach of shell-fish, we shall not dwell upon them, for we confess a weakness for a roast oyster or clam, and should prefer meeting them in open conflict to contemplating their merits at a distance. As yet little attention, comparatively, has been paid to the domestication of salt-water fish, yet the resources in that direction deserve investigation, and should not be undervalued.

Our fresh-water fish are as numerous as they are distinguished, and most of them may be domesticated. The bass, sometimes, but erroneously, called the trout, sometimes the black bass (about which there appears to be confusion,) is one of the finest fish on this continent, and attracts attention as a fit subject for domestication. He has a large mouth, and is a bold and vigorous biter, frequently leaping out of the water at the fly, live minnow or piece of cotton. Those that I have taken in the Savannah have an olive-colored back. I am told those taken in the St. John's River, Florida, are dark, almost black. They grow to weigh as high as ten pounds, perhaps more. It is eminently a game fish, and gives much sport to one who knows how to handle the rod and reel. In that respect he is not inferior to the rock, or, indeed, to any fish of equal weight.

The channel or blue cat is rich and fine flavored, and much esteemed by connoisseurs. The bream is reputed the finest pan fish in the world. The pike, the goggle-eye, the sun-fish, mawmouth and others of the perch family, are well known, esteemed, and good pond fish.

Of the salmon, which has been styled the king of fish, it is unnecessary to say a word, as his merits have been extolled from all time. He is a prominent type among the migratories, and his habits have been closely investigated, and excited a great deal of controversy.

He was formerly common to the waters of the Connecticut, the North River, the Delaware, and even at the present day one of the varieties of that tribe is occasionally taken in the Susquehanna. It is confidently asserted that he may be introduced into our rivers—there is no apparent reason why he should not be acclimated here, for no waters would appear better adapted to his habits. If we have no salmon, (whose introduction we hope

will not be longer postponed,) thanks to General Hampton we have the trout, which is the next best, and is already abundant in some streams, and in the course of time, with a little aid, we hope will stock all the upper waters in the State. It has been said, "that he who makes two blades of grass grow where one grew before, has done more for mankind than the whole race of politicians." This most valuable fish is now where there were no fish before, for the ascent of all was, and is, estopped by falls which they cannot surmount.

Such additions, if properly protected, are for all time. They have become a resource to the inhabitants, and an attraction to the disciples of quaint Isaac.

As we have mentioned, the gourami, reputed the most exquisite in flavor of all fish, it may be interesting to add a few words, as it is in the order of probabilities (if attention be sufficiently awakened to this art) that it may be domesticated and acclimated to the waters of our State. A friend who visited that singular built city, Palemburg, on the Monssie, in Sumatra, tells that the *Stak Gourami*, so valued by that people, resembled the trout in flavor. A high eulogium. The last named seldom grows to much more than four pounds, whereas the former, under favorable circumstances, reaches as high as one hundred and ten, with a length of six feet. This fish is eminently herbiverous, and will live on all garden vegetables, such as cabbages, carrots, lettuce, etc., as well as the ordinary grasses that grow in ponds, not, however, refusing cooked or raw flesh; hence he has been called the *Cochon des rivieres*, or river hog. He is very sensitive to cold, and will not live where ice is formed; on the other hand, no water appears too warm for him. This fish has a pharyngial apparatus, or reservoir, from which it can draw and keep its gills wet, and thus is enabled to live a long time out of water. The French have made many and vigorous efforts to introduce the gourami into France, the West Indies, and, more lately, into Algiers, thus far with little or no success. The first efforts date back to 1761. The societies of acclimatation of Victoria, Melbourne, etc., have introduced it into Australia and Tasmania, with what results we are not informed. Now that the transit from the East, through the Suez canal, has shortened the route, which was formerly around the Cape of Good Hope, we may hope with some confidence that future efforts will be crowned with success under the auspices of the many distinguished members of the French Society of Acclimatation, which counts among them the academician Mons. Corte, the learned professor of the College of France, by whose efforts the science of pisciculture has already been so benefited.

To the commonwealth, fish and fish offal offer a resource of importance which she cannot afford to ignore. Our lands are impoverished by improvident culture, and inferior fish or fish offal is a most efficient regenerator; composted or dried in the sun (or artiffcially,) and ground, it is a valuable fertilizer, inferior to no other, no where more needed than in Carolina. This whole subject is full of private and public promise, presenting profitable business to many, and the best of cheap food to thousands.

Where there is lack of knowledge, such undertakings end in discomfiture and disgust. What is utopian to-day, comes to be common place to-morrow,

and things disregarded as valueless at one time, are of vast importance at another. It is strange that there should be so much indifference, such stolid apathy to that kind of knowledge to which we owe all we have of civilization, the only key to boundless worlds of marvels. The word says, "Be ye skilful in all wisdom, and cunning in knowledge and understanding in science." T. G. C.

The Black Spanish Fowl.

In our March number we described, among others, the Black Spanish Fowl. We herewith present very good likenesses of a pair of them. It will be seen that their form and bearing are in the highest degree noble and proud. In beauty they are excelled by none.

The white face is considered an arbitrary rule in judging this fowl; but it is not fully developed in young cocks and pullets, from eighteen months to two years being required, in many cases, to perfect this characteristic mark.

We have found the Black Spanish a very satisfactory breed for our own purposes, the hens being good layers of large, white, rich eggs. The pullets

generally commence laying at from five and a half to six months old, and continue to lay almost the whole year round. It is an active, enterprising and spirited breed, and high fences are required where it is necessary to keep the fowls within narrow bounds. The chickens grow rapidly, and are famous foragers, soon providing largely for their own wants, in the matter of food, if allowed sufficient range.

Hogs—The Black Essex Preferred.

I commenced experimenting with hogs in the year 1849, and have purchased largely of the various breeds celebrated in England, and in the Northern and Western States, including Chester Whites, Suffolks, Yorkshires, Dutchess County, Lincolnshire Whites, Woburns, Chinese or Guinea, Neapolitan, Black Essex, old-fashioned Berkshires and the improved Berkshires, known as the Prince Albert or Windsor stock of Berkshires. My experience has taught me that a black hog suits our climate, and our mode of treatment, much better than the white, the latter being more subject to cutaneous and other diseases.

The Black Essex may be classed with the smaller breeds of swine, but when fully grown and very fat, they can be made to weigh up to 400 pounds net. They are exempt from diseases of the skin, are very thrifty and can be fattened at any age.

The Prince Albert, or Windsor Berkshires, are becoming very popular in England, Canada and some of the Northern States. They have been improved at the Royal Farm at Windsor Castle, England, by selections, and by judicious crossing with the Neapolitan, the original basis of the Black Essex breed. They have but little white on them, have more length than the Essex, and average much heavier weights when fattened, are very active and thrifty, and well adapted to those who desire hams and bacon for family use.

RICHARD PETERS.

Atlanta, Ga.

Surgical Operations on Inferior Animals.

The intelligent planter, in every age of the world, has recognized the great importance of stock-raising in connection with, and auxiliary to, successful agriculture. Hence the care bestowed upon domestic animals in those countries where the cultivation of the soil has attained its greatest perfection.

A veterinary college was established in England in 1792, at St. Pancras, in the vicinity of London, having in view the treatment of the diseases and accidents to which those animals are liable. Mr. Thomas G. Clemson, in his report to the South Carolina Agricultural and Mechanical Society, says: "While speaking of the farming and gardening school at Hohenheim, supplementary to the agricultural education of the farmers, is an institution for

the study of anatomy, physiology, training and diseases of animals—the Veterinary College of Stuttgart."

In our own country, I am not aware of the existence of any institution of this character. Therefore no class among us are better prepared to experiment in this useful and interesting department than physicians who are engaged both in the practice of medicine and farming, as is often the case with our country practitioners.

During the last twenty years I have frequently operated upon dogs, hogs, cattle and horses, almost in every case with success, notwithstanding, I frankly admit, that I do not consider my attainments in comparative anatomy superior to that of my fellow-practitioners in general. The results of my experience convince me that inferior animals recover more speedily from surgical operations than the human subjects. In confirmation of this fact, I might relate many cases, but for the present will only bring to notice the following instance:

On the 15th day of last April, I saw a young sow aged twelve months, the property of Mr. H. Carr, of Colleton County, bringing forth her first litter; five healthy pigs were born, while the sixth pig, being somewhat larger than the others, in passing through the pelvis, inferior extremities foremost, suffered a lodgment of the shoulders and head so firmly impacted, as to be immovable from without. She had been in this condition some twelve hours, when I told the owner if he would have her secured, I would perform the cesarean section. She was placed upon her back, with her feet drawn widely apart. I then made an incision in the *linea alba* large enough to admit my hand, which was passed into the inferior strait, seized the head and brought it out. The wound was stitched with four sutures, the patient confined to a pen and fed on water and corn meal for four days. The wound healed rapidly by the first intention, and about ten days after the first operation, the sutures sloughed off spontaneously, when from every indication the recovery was complete. The pig which was excised, had been dead sometime, as putrefaction had taken place. Had the operation been performed earlier, its life would have been preserved. The sow raised the five pigs and gave birth to seven more last October.

I have been told by farmers that such cases have occurred in their experience, and always proved fatal.

W. M. SHULER, M. D.

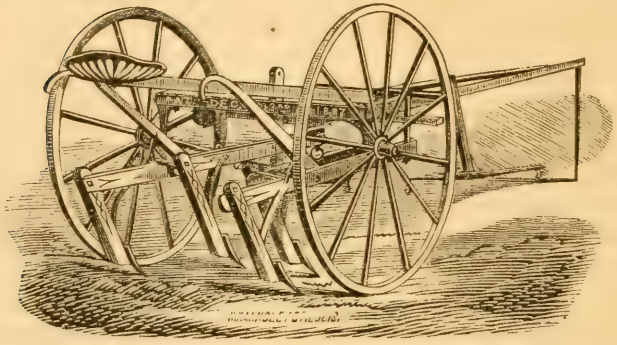
Breaking Oxen.

Mr. Editor: The simplest plan I have tried is as follows: Set a strong post in the earth so that it will stand about three feet high; bore a hole in the

top to receive a stout pin; have a springy pine or gum pole twelve feet long in readiness. Pin this pole to the top of the post so it can swing around. At the other or small end, you can attach a bow, unto which the young ox can easily be fastened. For a day or two he will be quite savage, and care should be taken to encourage and gentle him. As soon as he will eat and drink the trouble is over. In a few days you can hitch him with an old ox, and he will work kindly and well. By this method we have avoided the many cruelties practiced by our irresponsible laborers of the present day. Mk.

Department of Mining and the Mechanic Arts.

The Challenge Cultivator.



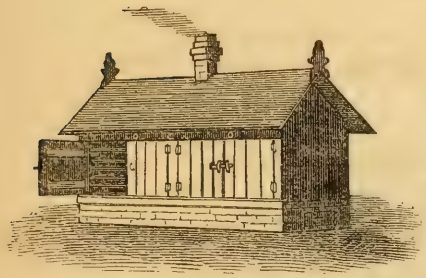
Where labor is both scarce and unreliable, it is astonishing that prejudices should exist, as they do exist in many minds, against the introduction of improved agricultural implements. The sight of a sulky cultivator is generally a source of merriment to the passers by, and yet an intelligent white man, willing to work, can do more work, and do it more effectually, with one of these wheeled implements, drawn by two mules, than can four negroes each with one mule. The planters of the Great West are beginning to find this out, for everywhere new implements are being introduced, and the demand for them is building up manufactures and warehouses all over the West. One of our South Carolina planters could for a forenoon be entertained sight-seeing in Bustamante's agricultural implement warehouse, in Jackson, Miss.; and to see the "Chalienge Cultivators," at J. J. Richard's, Canton, Miss., counted by the fifties and hundreds, he would think that was the place they were manufactured.

When the "Stafford Cultivator" was invented, the land had to be prepared for the plow. The "Buckeye" remedied this defect, and hence was an improvement. The "Challenge" improved upon the "Buckeye," inasmuch as

the wheels and axle are simply for the convenience of the rider, and the plows are worked exactly as if the team were hitched to the front wheels of a wagon, and the beams of the plows to the axle.

The above cut represents the machine arranged for riding. When not required, the seat can be removed. D. W. A.

A Fruit-Drying House.



The following sketch, which appeared originally in the *Horticulturist*, is of a building of moderate dimensions, 4x12 feet, and five feet in height, set upon a wall of brick or stone, twenty inches high; and, to obviate the necessity of going inside when heated up for drying, it is constructed with two tiers of drawers on either side, twenty-three inches by five feet, with slat or wire bottoms, each one made to slide in and out independent of the rest, and each tier enclosed with double doors. The building is heated by means of furnaces extending from either end, and communicating with the flue in the centre. By reason of the drawers meeting over the furnaces in the middle, the heat in rising is compelled to pass through them, thus the fruit is dried faster than by the usual mode of placing it on shelves against the wall of the house.

The number of drawers may be increased to double the amount represented in the drawing if necessary, which would make them hold a considerable quantity of fruit, say from twenty to thirty bushels.

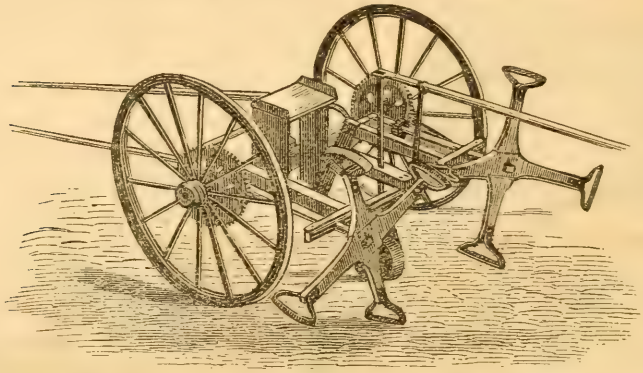
The building should be constructed of light timber, may be weather-boarded horizontally or vertically, and made ornamental or otherwise, according to the taste of the owner. J. C. HOBSON.

Preserving Wood—Foreman's Method.

Mr. Foreman's method of preserving wood is attracting attention. It is simple, and is said to be effective. The method consists, according to the *Journal of Agriculture*, in the use of a combination of arsenic, corrosive sublimate and common salt; and the mixture is used upon the wood in various ways within the means of any farmer. For instance, with fence posts, particularly if they are green, a hole may be bored near the surface of the ground, and another near the top, the material inserted, and the hole plugged up with soft wood. It is claimed that the preservative materials thus introduced will gradually permeate the pores of the wood. It may be used by other modes upon shingles, lumber, etc.

The preservative qualities of the materials used are well known. Arsenic and corrosive sublimate, singly or combined, have been long used by physicians for preserving anatomical preparations in a dry state, with perfect success, as nearly every physician knows. If the wood can be made to absorb the materials to a sufficient extent, as seems to be the case in the specimens we have seen, there is no doubt of the value of Foremanizing. The composition is said to cost about fifteen cents a pound, and one pound is sufficient for ten fence posts.

A Horse-Power Cotton Chopper.



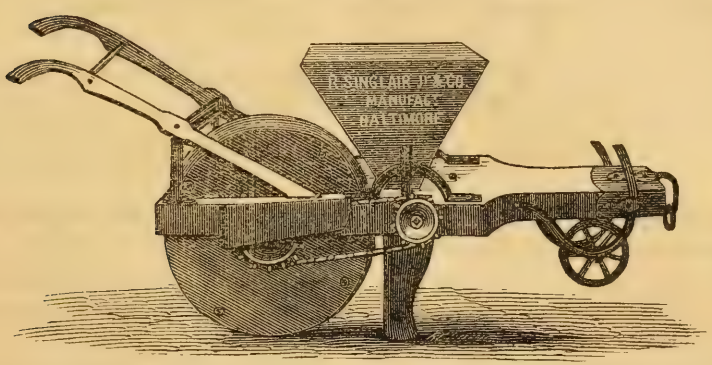
A Mr. Corcoran, of Columbus, Ga., has invented, and, we suppose, patented a labor-saving machine that might be called a cotton chopper. It is a two-wheeled vehicle, with an axle long enough to allow the wheels to span two rows of cotton, while the horse, in shafts, draws the vehicle as he walks in the water-furrow between the two rows to be chopped out. The driver sits in a seat over the middle of the axle. On the inside of each hub is a cog gearing, that revolves horizontally a shaft that extends backward a few inches beyond the tire of the wheels. These two shafts are supported in their horizontal positions by running through what may be called a wide slider, fastened upon the hounds of the vehicle. On the ends of these two horizontal shafts are two crosses of strong timbers with arms long enough to reach the top of the cotton beds. On the end of each arm of each cross, eight in number, is a styrup-shaped blade, like a gouge. As the horse walks along, these horizontal shafts whirl or turn in the hole through the slider, and as they turn the arms of the crosses revolve like a small wind-mill, and the gouges cut out the cotton. A wheel precedes each set of gouges, or is in front of each cross, that levels off the bed by crushing clods, or shoving aside all irregularities. This is one step exactly in the right direction, and if Mr. Corcoran can reduce this machine to such perfection as to ensure its adoption as a plantation instrument, he richly deserves the patronage of the cotton growers of the South. D. W. A.

[Another implement for thinning out cotton, called the " Darden Cultivator

and Chopper," is thus described by Mr. Langdon, the excellent agricultural editor of the *Mobile Register:*]

"The implement consists of a plow, with two cast iron wheels, two revolving hoes, and a harrow. It is so constructed that, when drawn, the two wheels, running one on each side of the bed, by their rolling cause the two hoes to revolve and chop out the cotton with the utmost precision and regularity. The first hoe to be used cuts alternate spaces of an inch and a half in width, gradually thinning the cotton, and may be run over the bed two or three times, if necessary. The second hoe, cutting alternate spaces of five inches, runs only once, and, in case the stand is not good, need not be used. Where the stand is imperfect, or irregular, the hoes can be made to skip the plant, when desirable, by simply raising the handle of the plow, which will cause the hoe to pass over without cutting the plant. Behind the hoe is attached a harrow, which cultivates very completely the whole bed."

An Improved Corn Planter.



It is too late for our readers to be much benefited in this season's operations by anything that may be suggested in regard to corn planting, but as all subscribers of THE RURAL CAROLINIAN will carefully preserve each number, they may take another look at the foregoing cut next spring. It is said that this machine, with a man and horse, will plant, cover and roll from twelve to fifteen acres per day.

Cotton-Seed Oil.

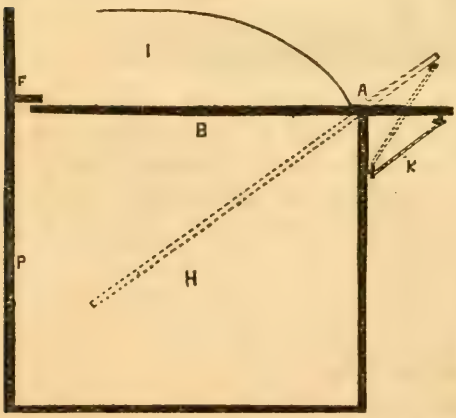
The manufacture of this oil in the United States now reaches the enormous figure of ninety thousand gallons per week, and is still increasing rapidly. It is used almost exclusively for adulterating other oils, such as linseed, lard, olive and sperm, for which purposes it seems peculiarly fitted, having no very distinctive features of its own. Indeed, its only really legitimate uses are for mixing putty, for which it answers better than any other known oil, and

in tobacco curing, in which it has advantageously replaced the bene oil, formerly imported for that purpose. When refined, it mixes well with olive oil, and it is exported from England to Marseilles and Italy to adulterate the olive oil, used so largely for cooking, as well as eating, in Southern Europe. Indeed, it is predicted that it will, in time, largely replace lard for culinary purposes in this country. It has recently fallen in price in New York from seventy to forty-seven cents per gallon. The crude oil is of very dark red color, which it derives from a sort of resin, which can be seen in black specks, in the kernel of the seed, with the naked eye, and the presence of this resin causes much trouble in refining the oil. A convention of the manufacturers of cotton-seed oil is about being held in New York City, to consider various subjects connected with the business, and especially to find legitimate uses for the oil. It is claimed that fifty per cent. of it, mixed with linseed oil, is better for painting than the pure linseed, as it dries as rapidly, and gives a coat more elastic and less liable to crack or peel off. As a soap stock, it also does well, when mixed with other oils, but alone it does not harden readily on the addition of salt, as other oils do.

A.

A Simple and Efficient Rat-Trap.

Mr. S. D. Snook, in the *Country Gentleman*, describes what seems to us an excellent contrivance for catching rats and other animals, as follows:



"It is of that class known as box traps. The box should be made of inch boards, either oak or some equally as hard or harder wood, to prevent the prisoner from gnawing out. The side I should be four inches higher than the front, and tapering as shown; the rear end P of the same height and the full width. B is the platform; it is hung on two pins A, one at each side. The platform extends four inches beyond the side, and in its lower side, near the end, is driven a nail, and also one in the side, which nails are connected by a piece of rubber or other elastic substance; the platform should be made of light material. Bait should be tied to or laid on the projection F; if for rats, fix the platform so that it will not spring, and on it scatter some food; in two or three days remove the fastening, and when his ratship gets about half the distance from A to F the platform will tip and leave Mr. Rat in the box H, when the platform instantly returns to its former position. The dotted lines exhibit the position taken by the platform B, when acted on by the animal.

Patented Sugar, Tobacco, and Rice Barrels.

Now-a-days every idea, that can be utilized, is patented, and joint stock companies are as numerous as the patents. Such a company was recently formed in New Orleans for the purpose of manufacturing barrels after the Waters' patent. This barrel, or, as it should be called, cylindrical box, is made of a series of sections like so many large cheese-boxes, without bottoms, placed on top of each other to any height, and held together by four or six strips of hoop-iron or thin slats of wood running vertically inside and out from top to bottom of the barrel, and riveted together between the sections or horizontal boxes. The heads are also patented, and made to fit in very closely without the necessity of crozing.

The material of which these cylinders is made may be wide or narrow, of any kind of wood, and so thin, that one the size of a rice tierce would be lighter than a flour barrel. The machinery for cutting ("slashing") these horizontal staves costs, all told, three hundred dollars, and can be readily geared to the machinery of a saw-mill. The patentee guarantees they can be made of any size, from a cheese-box to a hogshead, for less than half the cost of making the same article under the present system of manufacture.

They do not claim to be commended for holding liquids, nor for pressing cotton; but to me it seems they might readily be substituted for bagging and ties in packing cotton. If a cylindrical barrel, weighing less than seven yards of bagging and six ties, and costing only about half as much as the bagging, can be made to hold 500 pounds of lint cotton in as small space as an ordinary bale, why should it not be preferred as being so much better security to the planter against stealage, fire, etc.? D. W. A.

New Orleans.

Lengths and Weights of Square Iron, from One-quarter to Five Inches Square.

Size.	1 Foot.	2 Feet.	3 Feet.	4 Feet.	5 Feet.	6 Feet.	7 Feet.	8 Feet.	9 Feet.	10 Feet.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
¼	.208	.416	.624	.833	1.04	1.24	1.45	1.66	1.87	2.08
⅜	.468	.937	1.4	1.87	2.34	2.81	3.28	3.75	4.21	4.68
½	.833	1.66	2.49	3.33	4.16	4.99	5.83	6.66	7.49	8.33
⅝	1.3	2.6	3.9	5 2	6.5	7.8	9.1	10.4	11.7	13.
¾	1.87	3.74	5.61	7.48	9.35	11.22	13.09	14.96	16.83	18.7
⅞	2.55	5.1	7.65	10.2	12.75	15.3	17.85	20.4	22.95	25.5
1	3.33	6.66	9.99	13.32	16.65	19 98	23.31	26.64	29.97	33.3
1⅛	4.21	8.42	12.63	16.84	21.05	25.26	29 47	33.68	37.89	42.1
1¼	5.2	10 4	15.6	20.8	26.	31.2	36.4	41.6	46.8	52.
1⅜	6.3	12.6	18.9	25.2	31.5	37.8	44.1	50.4	56.7	63.
1½	7.5	15.	22.5	30.	37.5	45.	52.5	60.	67.5	75.
1⅝	8.8	17.6	26.4	35.2	44.	52.8	61.6	70.4	79.2	88.
1¾	10.2	20.4	36.6	40.8	51.	61.2	71.4	81.6	91.8	102.
1⅞	11.71	23.42	35.13	46.84	58.55	70.26	81.97	93.68	105.39	117.1
2	13.33	26.66	39.99	53.32	66.65	79 98	93.13	106.64	119.97	133 3
2⅛	16.87	33.74	50.61	67.48	84.35	101.22	118.09	134.96	151.83	168.7
2¼	20.8	41.6	62.4	83.2	104.	124.8	145.6	166.4	187.2	208.
2⅜	25.2	50.4	75 6	100.8	126.	151.2	176.4	201.6	226.8	252.
3	30.	60.	90.	120.	150.	180.	210.	240.	270.	300.
3½	40.8	81.6	122.4	163.2	204.	244.8	285.6	326.4	367.2	407.10
4	53.33	106.66	159.99	213.32	266.45	319.98	373.31	426.64	479.97	533.30
4½	67.5	135.	202.5	270.	337.5	405.	472.5	540.	607.5	674.10
5	83.33	166.66	249.99	333.32	416.65	499.98	583.31	666 64	749.97	833.30

THE RURAL CAROLINIAN.

VOL. I.] CHARLESTON, S. C., MAY, 1870. [No. VIII.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

HINTS TO BE HEEDED.

While our words were yet timely, we repeatedly warned our readers against the suicidal policy of exclusive devotion to a single object of cultivation—in other words, against putting all their eggs in the cotton basket. We urged them, first of all, to make ample preparation for the provision crops—to sow wheat, rye, oats and barley—to plant corn, sorghum, tropical sugar-cane, Irish potatoes and beans—to insure themselves against a lack of food for their families and stock. We believe our words were not spoken in vain. We have no doubt they have been heeded by many; but THE RURAL CAROLINIAN, widely as its circulation has already extended, does not reach everybody, and the cotton mania has not, on the whole, abated.

We have not the gift of prophecy, and shall not attempt to estimate the next cotton crop in advance; but the reports before us, from our correspondents in every portion of the cotton belt, justify us in saying that preparations have been made for a big crop. Our associate, Colonel D. Wyatt Aiken, reports from Mississippi that the acreage in cotton is immense, and that if the hopes of the planters should be realized in the crop, that State alone will produce one million bales! But it is not alone on the area planted that the expectation of a heavy crop is based. There has been very generally a more thorough preparation of the soil, and a more liberal use of manure than ever before. If the season should be favorable, and the muscle-power do not fail in the time of the greatest need, there will be a heavy crop of cotton and a decline in prices.

Well, the cotton is planted. Let it be well worked and a good crop made. We do not say that it will not pay. We hope it will; but let us see what can yet be done to prepare ourselves for a short provision crop and the possible low price of cotton.

1. In the first place, the best possible cultivation can be given to the corn already planted, so as to ensure a good crop, while, in many cases, some additional acres may yet be broken up for a later planting.

2. Unusual care may be taken in harvesting and storing the small grains, that nothing be wasted or injudiciously used.

3. Sweet potatoes, peas, beans, and millet and other forage plants, may and should be largely planted. There can scarcely be an excuse for an insufficient supply of potatoes, and, having these, we shall not starve. They furnish food fit for a king, or a farmer. An acre or two of beans—the navy bean or some other white variety—will be a great help, and furnish a good substitute not only for grain but for meat; but we need not specify further. If there has been a mistake made in planting too largely of cotton and too sparingly of the provision crops, let us do what can yet be done to correct the latter error; and, while hoping for the best, be prepared for the worst.

LATIN NAMES.

There is nothing better in its way than good, plain Saxon-English. Everybody understands the common words which everybody uses, and when they serve the purpose in view, there is no good excuse for drawing upon the locked-up stores of Greek, Latin or French; but there are cases in which these common English words fail us. Science does not belong to the English-speaking peoples alone, but is universal, and its names of things have been made up from languages supposed to be common to all scientific men,

whatever their nationality—the Greek and the Latin. We cannot wholly avoid making use of these names. For instance, we are speaking of a certain plant, and designate it by the common name by which it is known in our neighborhood. The people of our neighborhood understand what we mean, but this plain English common name may mislead everybody else. The plant may have three or four common names in as many different States or districts, and the one we have used may be elsewhere applied to a plant of quite a different character. Now if we mention (in parentheses) the botanical name, we furnish a key which can be used everywhere. That name is the same in Georgia as in South Carolina—in Europe as in America—and a few persons, at least, in each neighborhood will know exactly what plant we are speaking of.

We do not make use of botanical names for the purpose of displaying our knowledge of botany, of which we have none to boast of, but for the purpose just indicated—to make ourselves understood. The usefulness of these names is often illustrated in our own experience. Lately a correspondent gave us an interesting article on "Evergreen Grass," which attracted much attention, and caused considerable inquiry for the seed of the supposed new plant. Now if this grass is simply Tall Oat Grass, (*Arrhenatherum avenaceum*,) as we infer from the appearance of the seed, our correspondent might have saved some persons the trouble of sending to North Carolina or Virginia for what may perhaps be got in their own neighborhood or on their own farm. Evergreen grass is a *local* name, and may or may not be applied to the oat grass. The botanical name would have told us just what it is.

Again, we asked, through THE RURAL CAROLINIAN, for a small package of Egyptian millet seed, mentioning the common name by which we have been accustomed to designate a large, tall-growing, oriental *panicum*, the specific name of which we do not know. Some of our readers may know it as "Cat-tail millet." We got several packages of the seed we desired, but if we could have given the botanical name in full, it would no doubt have prevented several persons from sending us Guinea Corn and Doura Corn, which do not belong to the *panicum* family at all, but are *sorghums*, (*S. cernuum* and *S. vulgare*, we believe,) and closely related to the Chinese Sugar Cane; so we shall always mention the botanical names of plants, (long and "learned-looking" though they may sometimes be,) if we know them, and think them necessary to a clear understanding of what we are talking about; and we shall be glad to have correspondents do the same.

SKETCHES OF EMINENT MEN.

It has been a part of our plan from the first to publish, from time to time, sketches of men who have distinguished themselves as planters, farmers, manufacturers, merchants, mechanics, scientific workers, etc., and we have the pleasure of presenting, in the present number, a memoir and a life-like portrait of George W. Williams, the eminent merchant and banker of Charleston, which we commend to the attention of our readers, and to that of our young men particularly, as an excellent example of the success which industry, energy and perseverance, guided by intellect, and controlled by high moral principle, are capable of achieving.

The fine steel plate which accompanies our sketch, is by Mr. J. C. Buttre, of New York, and is an excellent likeness, as well as a beautiful specimen of the engraver's art.

In future numbers we hope to present sketches of other eminent Southerners, reviewing their careers from an industrial rather than a political or a personal point of view.

OUR GRAND FLORAL EXHIBITION.

May is with us emphatically the month of flowers, and we open it here in Charleston, (May 3d,) very appropriately, by a floral exhibition. We trust that the preparations made for it have ensured a fine and very attractive show. We are sure our people will make it a success by a full attendance. The address by Dr. Simms will be worthy of the occasion. Our country readers should make this the occasion for a visit to the city. Bring your wives, bring your children, bring *flowers!*

THE AUGUSTA EXHIBITION.

Immediately following the floral exhibition of the Charleston County Agricultural and Horticultural Society, in this city, (May 3d,) comes the Horticultural Exhibition of the Cotton States Mechanical and Agricultural Fair Association, at Augusta, Ga. Preparations have been made on a liberal scale, and an attractive exhibition may be counted upon. Why may not many of the exhibitors at our floral festival take their flowers from here to Augusta and enter them there also? The Augusta Exhibition opens on the 11th. All will receive a hearty welcome in the beautiful City of Augusta.

A GREAT NUMBER.

Our readers will bear witness that we are not accustomed to "puff" ourselves or our magazine, but we feel fully justified in calling attention to the present number as an extra one, in point of quantity at least, and, we believe, equal to any in quality and style. Besides the fine steel portrait, we present a large number of excellent wood-cuts by our own artist, Mr. Redding, and twelve extra pages of reading matter.

We are sparing no labor or expense to give our subscribers what we promised them in the outset—a first-class illustrated agricultural journal. With their approval and help, we shall continue to improve it.

SISAL HEMP.

A correspondent of the *Mobile Weekly Register* calls in question several statements of ours in the March number of THE RURAL CAROLINIAN in regard to Sisal Hemp, and says that our cut is not a correct representation of that plant. Now we may be in error and this writer may be right, but we drew both our illustration and our description from official documents, (the Reports to Congress of Dr. Perrine, the original introducer of the plant, who certainly ought to know what it is like,) and if wrong have been led astray by good authority. The fact seems to be, however, that the *Register* correspondent is speaking of one thing and we of another. Sisal Hemp is *Agave Sisalana*, quite a different plant from *Agave Americana*, with which the writer confounds it. Dr. Perrine figures both in his Report now before us. Either we are right, or Dr. Perrine himself did not know Sisal Hemp.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Cotton will demand unremitting attention throughout the month, and any neglect now will tell badly on the crop, for it cannot be wholly made up afterwards. Let the plows move briskly, and the hoes follow. Break out the middles thoroughly, and leave the whole ground perfectly clean. If the corn needs attention, it may be well, in some cases, after running two furrows to each row, to put the plows into the corn-field while the hoes go over the crop, returning and breaking out the middles afterward. Toward the last of the month, the plows will have to get back into the cotton again. *Let no grass grow under your feet!*

Corn must not be neglected, even at the call of King Cotton. We must have bread, whatever else we lack, and our stock must be fed. Let the cultivation of the corn be the most thorough possible, but remember that the roots run near the surface, and must not be broken; so *plow shallow.*

Sweet Potatoes must not be neglected while the vines permit working. Before the roots have extended far, it is well to run a bull-tongue plow deeply through the beds on each side of the row, to loosen and pulverize the soil, after which the principal thing is to keep the patch free from grass till the vines cover the ground.

Hands and Mules must be well fed and kindly treated, if you wish willing and efficient labor. Give both time to eat and to rest, but when in the field let "lively" be the word.

GARDEN WORK.

Weeds and Grass should have your first and continued attention during the month. Unless they are kept in subjection, all your previous labor will be lost, and your manure feed crops for which it was not intended.

Snap Beans should be planted every ten days to keep up the succession.

Cucumbers, Melons and Squashes may still be planted if needed, but the sooner the better.

Cabbage, Brocoli and Cauliflower may be sown for a fall crop. Sow in rather poor ground, so that the growth may not be too rapid. The seed beds will need watering if the weather be dry. Sow Southern grown seed for this crop.

Celery of last month's sowing may now be pricked out. Set the plants three or four inches apart in a moist, partially shaded situation. Seed may still be sown, but unless shaded and frequently watered there is danger that it will not germinate.

Kohl Rabi plants of last month's sowing should be transplanted; also sow more seeds. They will stand the heat better than either turnips or cabbages.

Tomatoes and Peppers should be transplanted in favorable weather, watered and shaded. A heavy mulching of the ground under your earlier tomato plants will help to keep them in good condition.

THE FLOWER GARDEN.

Weeding, Transplanting and Watering are the principal thing to be attended to this month. Everything will grow rapidly—especially weeds.

THE FRUIT GARDEN.

Examine your fruit trees and kill all caterpillars and injurious insects that may infest them. Thin out fruit if necessary, as it generally is. Remove all useless shoots from your vines.

OUR AGRICULTURAL REPORTS.

The reports of our local correspondents for the last two months, (for which each will please accept our thanks,) are sufficiently numerous and full to warrant us in a somewhat extended review of the principal facts elicited. On some points of inquiry, however, the information received is still too meagre to permit safe generalization. We hope to supply this deficiency, in due time, by means of other and more specific questions in a future circular.

SOUTH CAROLINA.

Our reports from this State are more numerous and full than those from any other. We deduce from the heavy package of returned circulars before us the following facts:

1. *The Season.*—Returns indicate that the spring has been uncommonly wet, cold, and backward in most localities. Four-fifths at least of our correspondents report "wet," "very wet," or "wet and cold," up to about the middle of April. There are exceptions. A correspondent in York County reports, "dry for this season." Others in Anderson, Lancaster, Edgefield and Newberry, return "seasonable," "fine farming weather," "neither very wet nor very dry," etc. On the whole, we may set down the spring in South Carolina as *wet, cold and backward.*

2. *Preparation for Crops and Planting.*—In consequence of the condition of the season, as indicated in the previous section, the preparation of the soil was delayed and the planting was late.

3. *The Small Grain Crops.*—There is an increased acreage in the small grains, especially oats, as compared with last year. Present prospects at the time the returns were made only moderate, as a rule, but some report them as looking exceedingly well.

4. *Cotton.*—It was too early when many of our returns were made to enable correspondents to reply with confidence to our inquiry in regard to the acreage in cotton. A majority of those who make returns on this point set it down as about the same as last year. From Barnwell, Richland, York, Newberry, Fairfield, Marion, Chesterfield, and Orangeburg Counties, an increase is reported; but, as might be expected, our returns are often conflicting. One from Richland returns the amount as less than last year. Probably there is in the State only a slightly increased acreage in cotton, compared with last year, but a better preparation of the soil and heavier manuring. Improved seed, especially Dickson's, is more generally planted.

5. *Corn.*—About the same area has been planted as last year, we judge, but there may be a slight increase. The preparation of the soil and manuring, as in the case of cotton, is better than last year.

6. *Rice.*—In regard to this crop we have few returns.

7. *Sorghum, etc.*—The culture of sorghum is increased, but not largely. Broom-corn and Castor Oil bean are being tried by a few.

8. *Labor.*—The freedmen are reported as very generally either under contract of some kind, or farming for themselves. Few of

the women are in the field. Wages from five to ten dollars a month and rations, or from one-third to one-half of the crop—generally one-third. Labor is almost universally scarce. Very few immigrants are reported. Those employed get from ten to twelve dollars per month, with board. A great desire is expressed for more, especially Germans.

9. *Manuring.*—The commercial fertilizers have been used much more extensively than ever before, especially Charleston made phosphatic manures.

10. *Preparation of the Soil, etc.*—Improvements in the use of better implements and the deeper and more thorough preparation of the soil are very general and decided; but in some neighborhoods no improvement is noted. We trust that another year will find the progress universal.

BRIEF EXTRACTS.

Anderson co.—Labor is very scarce in this section, and, I think, over the county there is not more than one farmer in ten with hands enough. I know several plantations on which there is not a hand. I do not know of one but would employ one or more additional hands if they could get them. J. M. S.

Kershaw co.—Let me make a suggestion for your amplification. Encourage, by all influence in your power, the introduction of white labor, both foreign immigrants and "tenant farmers," the latter from Jersey, if we can get them. W. M. S.

Newberry co.—I have a cross of the African and native sheep which are very fine. The wool is of excellent quality for domestic purposes. The mutton is delicious. The sheep are large and well adapted to our use.

Wando, Wilcox & Gibbs Manipulated, Peruvian and Phœnix are the leading manures; many others are being used, but these seem to be best. It is difficult to get the Wando, and everybody wants it. There will be more used this year than last.

J. A. B.

Cheraw co.—Deep plowing is the order of the day in preparing the soil; but no labor-saving implements have been introduced.

No improved Stock except the Chester hogs and the Essex—Chester preferable.

A. J. W.

Marion co.—Commercial manures are very largely used, fifty per cent. more than last year. The Carolina Fertilizer, Baugh's Phosphate, Soluble Pacific, Wando, Etiwan, Phœnix and Navassa.

Deep plowing and subsoiling are largely on the increase. A few cotton-planters have been used, which have proved satisfactory.

Some Devon cattle, not thorough. A good many Chester hogs, but the Essex is becoming popular. No sheep but natives. A few half-breed Cashmere goats.

Grape-growing on a small scale is becoming pretty common, Scuppernong and its allies the principal vines. E. B. P.

Abbeville co.—I never have heard of so much subsoiling before, or such an anxiety to use any implement that is considered "A, No. 1." A few reapers, threshers, mowers, subsoil plows, two-horse plows, are in use. All seem to be pleased.

The Chester hog is not liked here, but a grade Chester and Berkshire, or Chester and Essex, is considered the hog for our county. The Merino sheep are liked.

There is a larger area of land in barley and clover, and the grasses generally, than ever before. J. D. G.

Williamsburg co.—The prosperity of our county, in a farming point of view, is fifty per cent. better than when the war closed.

T. M. K.

York co.—In this section the freedmen are working better, better stock is used, and a better selection of seed is going to be planted. Consequently, a better crop is expected.

J. W. A.

Newberry co.—That lack of labor will force the farmers to introduce labor-saving machines, a more thorough preparation of the soil, and a more liberal use of fertilizers, to ensure better results from the area planted, is apparent to all. T. W. H.

Marlborough co.—While planters and farmers are generally more careful in the preparation of their soil than formerly, but a few are beginning to use the subsoil plow. A lot of Murfee's subsoil plows, offered for sale at Bennettsville, sold out immediately. Labor-saving implements have not been introduced here yet to any extent. I have heard of none of the more expensive kinds. There is some improved stock in the county, although but few of pure breeds, being mostly crossed with the common breeds. We have cattle crossed with Devon, hogs with Chester Co. White and Essex; but few sheep and goats, and these of the common breed. D. M.

GEORGIA.

1. *The Season.*—The spring was wet and cold up to the middle of April, as in South Carolina, with similar results in regard to the preparation of the soil and planting, both of which were delayed.

2. *The Small Grain.*—There is an increase of acreage in the small grains, especially oats. Crops looking well, generally.

3. *Cotton.*—Our returns indicate about the same area of land in cotton as last year. The favorite varieties seem to be Dickson's and

Boyd's Prolific, but many other improved sorts are planted, including the Peeler.

4. *Corn.*—A majority of our correspondents report a slight increase of acreage in corn, as compared with last year.

5. *Rice and Sugar Cane.*—No returns.

6. *Sorghum and other Crops.*—Our returns are meagre on these points; but sorghum culture does not appear to be increasing. Fruit culture is gaining ground. Many Scuppernong vineyards have been planted.

7. *Labor.*—The same remarks will apply as to South Carolina, except that wages average a little higher.

8. *Manuring and Plowing.*—An immense increase in the amount of fertilizers used is clearly indicated. Peruvian Guano and Dickson's Compound are popular. Charleston Phosphates are also making progress there. Deep plowing and subsoiling are becoming very general *among farmers who read the papers.*

BRIEF EXTRACTS.

Talbot co.—The public mind is deeply agitated on the subject of improvement in farming and other industrial pursuits, but as yet we have made but little progress. Want of information, and the unreliable class of laborers, are serious drawbacks. We need system and concert, and more light on the subject. The copartnership plan is doing great harm. Small farms and thorough cultivation is conceded to be the best system.
J. C. B.

Muscogee co.—There is much need of more reliable labor. Many farmers have failed to secure hands to work their lands. Many of the freedmen are living in the cities by sleight of hand. H. P. F.

Elbert co.—Landowners are beginning to contract with "*boss*" freedmen, and let them get hands, and work such and such areas, and look only to the boss. I believe it is a favorite plan, and in many instances promises well. Responsibility stimulates them. Q.

Clarke co.—There is a decided improvement in preparing the ground for the seed. We are beginning to feel a pride in good plowing, and talk of it to each other.

Very few labor-saving implements have been introduced; as soon as we are able we will get them. J. A. L.

Lee co.—The Hunt variety of cotton is most used, I think, though the Dickson is soon to take the place of all others. The Peeler has declined very much in planters' estimation, as we could get no more for it than other cotton. A great many fogies stick to the old common kind.

Fertilizers are *much* more extensively purchased now than last year, even the *bitterest* opponent trying a little. Others who have used them before are using extensively, generally on entire cotton crop. We use many kinds; Dickson's ranks highest, though the Patapsco, Schley, and Zell's, are considered good.

Many improvements in regard to the preparation of the land with us. The Murfee subsoil plow, and the common scooter, are very much used in subsoiling corn land. The sulky cultivator was introduced by one man, but is, I think, a failure; also the grain drill, result undecided. R. J. H.

ALABAMA.

1. *The Season.*—Remarkably wet and cold up to April 15th. Planting late as in South Carolina and Georgia.

2. *The Small Grains.*—We cannot judge of the acreage planted as compared with last year. Wheat and oats are generally reported as looking well, though backward.

3. *Cotton.*—Our returns are meagre in regard to the comparative acreage in cotton, for reasons stated in a previous section, but such returns as we have seem to indicate a decrease in area from last year, but a more liberal use of manure and more attention to improved seed.

4. *Corn.*—About the same as last year.

5. *Other Crops.*—None returned.

6. *Labor.*—Freedmen generally contracted for part of the crop—from one-third to one-half—according to the conditions of the contract. Wages from ten to twelve dollars a month and rations.

7. *Improvements.*—Deep plowing, and the use of improved implements and commercial fertilizers are on the increase, but perhaps not to so large an extent as in South Carolina and Georgia, owing to the greater natural fertility and freshness of the soil.

BRIEF EXTRACTS.

Jackson co.—From what I can learn from the largest farmers here, they will not plant more than half the amount of land in cotton this year that they did last, and quite a number say they never expect to plant another cotton crop. J. M. B.

Dallas co.—Of commercial manures, Dickson, Langdon and Guano are the most used. The success of the little used last year has led to the greatest increase in the use of all varieties this season. The subsoil plow is

much used, also the cotton planter, and the land is better prepared than ever.

D. H. L. A.

Barbour co.—I will here remark that a thorough and perfect preparation of the soil cannot be too deeply impressed upon the mind of the planter. This done, and it is impossible to over-crop. Also, urge them to plant less cotton and more corn.

G. M. B.

Russell co.—Generally the planters have not labor enough, though the negroes work well. They are fast leaving large plantations and "settling" in the piny woods, where they can barely live. An immense amount of labor is lost in this way. J. M. A.

Colbert co.—A decided improvement is observable in preparation of soil, more particularly among white laborers—not much among negroes—labor-saving implements being introduced slowly. H. T. N.

Calhoun co.—Negro labor is mostly employed under the partnership system, but in no instance, so far as my knowledge extends, does it work satisfactorily to either the employer or the best interests of the country generally. Hence I have abandoned it and expect to continue so. E. A. C.

Chambers co.—Ten tons of commercial manures will be used this year to one last. Dickson's Compound, Chesapeake, Baugh's Raw Bone, Zell's Phosphate, Patapsco, Soluble Pacific, Phœnix, Wilcox & Gibbs', and Mapes'. H. H.

MISSISSIPPI.

1. *The Season.*—Wet and cold as in the other States already noted. Planting late.

2. *Small Grain Crops.*—These and the grasses are increased over last year. Present appearance, at date of returns, fair.

3. *Cotton.*—Acreage increased—in some counties largely. Many improved varieties have been introduced.

4. *Corn.*—Less planted than last year, so far as our returns enable us to judge.

5. *Other Crops.*—Few returns.

6. *Improvements.*—Improved implements and a better system of cultivation are gaining ground. Commercial fertilizers are beginning to be used.

7. *Labor.*—The negro labor of Mississippi is apparently less reliable and effective than almost anywhere else. The freedmen generally contract for part of the crop. Wages, when given, from ten to twenty dollars per month and rations. A large number of immigrants have been introduced with good success.

BRIEF EXTRACTS.

Hancock co.—Hancock County is covered with a dense pine forest. Most people are in the lumber business. Cleared land, splendid for fruit land, cheap and abundant. Semi-tropical products will grow here. Needed—more white immigration. F. H.

The county is agriculturally undeveloped. Its lands raise better sea island cotton than those of South Carolina and Georgia, and more to the acre; and to fruits, vegetables and root crops, it is splendidly adapted.

S. T. R.

Kemper co.—There is a sprinkling of Durham cattle through the county, and they are preferred to any yet introduced. A few Chester White hogs have been introduced within the last few years, and are much liked.

On account of frequent failures from rust, oats had almost ceased to be a crop, but within the last few years it has been discovered that *red* oats do not rust, and that variety is now generally planted with much success.

A. M. M.

De Soto co.—There has been a general improvement in hogs through the introduction of the Chester White, Berkshire, Woburn and Grazier. But little attention to other stock.

Many immigrants have been introduced. The Swedes, Swiss and Danes, giving general satisfaction, while the Germans have proven unreliable.

Lowndes co.—About 2,000 immigrants introduced into this section. They accept such partnerships in crops as negroes get.

R. H. S.

TEXAS AND LOUISIANA.

Our returns are not sufficiently numerous to permit any safe generalization. Sugar and cotton seem to have been very largely planted, but we are not able to compare the area with that of last year. The season is reported *dry* in Texas.

BRIEF EXTRACTS.

Travis co., Texas.—The freedmen prefer working for a share of the crop. They find all, and give the landholder one-quarter of the cotton and one-third of the corn. Women often assist, but are not constant field-workers.

Plowing is done deeper and better than formerly. Many new labor-saving implements are in use, with generally favorable results.

We have some few Durham cattle. Some Merino sheep and improved hogs. Cattle are mostly native stock. There are a few Angora goats, but they have not been profitable. S. B. B.

Ellis co., Texas.—Most of the negroes are renting land, and pay one-third of the grain and one-fourth of the cotton. Women do not work in the field.

Some emigrant laborers employed—fifteen to twenty dollars a month and board. They mostly rent land. J. A. S.

New Orleans, La.—There is a general tendency to improvement in Louisiana, and if the government will let the tariff alone, Louisiana will make 500,000 hogsheads of sugar within ten years. C. B.

FLORIDA.

1. *Season and Crops.*—The season was generally wet and backward till April, with unseasonable frosts in some parts of the State. The sugar-cane crop is largely increased. The acreage in cotton seems to be less, and that in corn greater, and the latter is reported as looking well. Orange culture is on the increase, and considerable attention is being given to other fruits.

2. *Labor.*—Labor is very scarce and unreliable.

BRIEF EXTRACTS.

Suwannee co.—There is a decided improvement in preparation of the soil over that of last year in this county. The prevailing idea this year is deep and thorough preparation and shallow cultivation. B. D. H.

Alachua co.—The planting of sugar-cane has been extended beyond that of any previous year considerably.

The oat crop is receiving more general attention. Many farmers are engaging in the culture of fruit—oranges, lemons, peaches, figs, bananas, etc. S. McC.

Madison co.—This county is as capable of sustaining a new age of improvement in stock, planting, etc., as any within our knowledge. S. T. H.

NORTH CAROLINA AND TENNESSEE.

From these States we have a few returns, but they are too conflicting to be of much service in enabling us to reach any general results, and we will postpone their consideration for the present, merely remarking that an interest in improved agriculture is evidently increasing in both these States, and a decided progress being made. Peanuts, broom-corn, the small grains and the grasses are receiving more attention than formerly.

RURAL NOTES AND QUERIES.

Essex Hogs.—A correspondent thinks we are in error in describing the Essex Hogs as "black and white, the black prevailing" and says they should be wholly black. We admitted this, is effect, when we added: "In fact the purest and most esteemed are entirely black." Practically, we have found the spotted ones just as good as the pure black, and we believe breeders in general do not consider purity of color an essential point. In this, however, we may be wrong, and shall be glad to be set right in the matter.

The Scuppernong from Cuttings.—I see a statement in your January number that the Scuppernong grape will not grow from cuttings. My experience with it is that it will. I have never had one die. Dig an oblong hole. Fill one end of it full of dirt, allowing some to reach the entire length of the hole. The bottom of the hole will then be an inclined plane. Lay your cutting on it, and cover it with clean mellow soil, tramping it with your feet very hard, and leaving not more than a half inch of the cutting above ground. I put all cuttings in the ground at an angle of from thirty to forty degrees, so as to admit of hard tramping. Do not stir the ground deep about them the first year. M. H.

Liquid Manure.—Subscriber. Mix your soot with an equal quantity of ashes, and moisten the whole with *hot* water. Let it stand (after being thoroughly mixed) for a day or two before filling up your cask with water.

The Pineapple.—S. A rich loamy and rather moist soil suits the pineapple best, but any good, well-drained hammock or bottom land will do.

To Prevent Ticks on Cattle.—M. P. Give the animals a mixture of equal quantities of salt and sulphur, two tablespoonfuls at a dose, twice a week. This treatment should have been begun early in the spring; but now may answer.

Not Dying Out.—Colonel Aiken, in one of his letters to The Rural Carolinian, speaks of the "dark-complexioned, curly-headed Americans" as "treading the path of the red men," and says "it is lamentable to philosophize upon their future condition."

This may be the case in Thomas County, Ga., where they get nothing to eat but potatoes, but it certainly is not the case here. There have been seven children born in less than one month upon Mr. E. Alexander's plantation, one woman having two boys, another having two girls, another one boy and one girl, and another one girl weighing nineteen pounds, whose father is sixty years old. Where there are no deaths, this don't look like depopulation. D. H. T.

Disease in Strawberries.—I would like to know a remedy for a disease in strawberries

similar to potato rot. For three years my strawberries, about flowering time, have in a few days turned perfectly black, and both leaves and fruit rotted. D.

Cotton Seed Cake, etc.—I am trying crushed cotton seed as manure; have crushed two thousand bushels. Will you please inform me where I can get all implements necessary for making the cake and extracting the oil.

Probably Gen. E. P. Alexander, President of Columbia, S. C., Oil Company, can inform you.

Sponge Cucumber.—I find the fibre of the sponge cucumber very durable and useful, and can recommend it as being equal to any other sponge. I send some of the seeds for any one who would like to try planting them. N. V.

Cokesbury, S. C., April 1st, 1870.

Pigs and Chickens.—A correspondent writing from Greenville, S. C., says:

"I have some very fine young chickens of the white Brahma breed, which I expect to put upon the market in the fall. This is a good section of the country for stock raising, clover and the grasses growing finely here with little care. Chester white pigs grown here have the advantage over those brought from the North in the fact that they are acclimated and stand our hot summers better." S.

Tropical Sugar-Cane.—Will you, or some of your able correspondents, inform me as to the utility of removing the tillers or suckers from the tropical sugar-cane. I cultivate the tropical cane for domestic purposes only, hence I need information. My practice has been, heretofore, to let all stand. The consequence is that at cutting time my cane is of various lengths. I would be glad to obtain a uniformity in length if possible. Will some one please give the information. W. E. F.

Montgomery Co., Ala.

Egyptian Millet.—Young Farmer. The seed you sent is what we have been accustomed to call Egyptian Millet. Some know it as Cat-tail Millet.

Bonnet Gourd.—D. H. T. Some confusion seems to have arisen in regard to this vegetable. The specimens received (supposed to be from you) are the sponge cucumber, (*Cucumis acutangulus.*). The Bonnet Gourd is much larger, and of a different shape.

Chinese Yam.—M. H. All the seeds were long ago distributed.

Celery and Asparagus.—"Sub," Gadsden, S. C. See article on Asparagus in the present number. Celery is somewhat difficult to grow in our hot, dry climate, but we have never met with the difficulty you mention. We suspect there was something wrong about the earthing up. We shall publish an article on Celery in our next.

Corn on Wet Lands.—Will you, or some of your contributors, inform me, through the columns of your paper, how to make corn on wet bottom lands. I have some bottoms that are covered with rushes and some other rough grasses. Other portions of my bottoms are clean and dry enough for the plow, but I fail to get a stand of corn every year. I planted four times last year, and failed at last. Most of the corn would come up but die in a few days—some would live three or four weeks before it would die. I am very anxious to raise my own corn. I will be very much obliged to any one that will give the desired information. H. D. B.

Newberry, S. C.

Dorking Fowls.—I see a pair of Dorking fowls are wanted by some one. I will let him have a pair for $6, or a trio (two hens and a cock) for $8, boxed and delivered to express agent at Winnsboro'.

Thos. R. Center, M. D.

Winnsboro', S. C.

The Best Fertilizer.—Hon. C. C. Langdon, agricultural editor of the *Mobile Register*, expresses the opinion that cotton-seed meal, bone-dust, plaster and salt, mixed in the proper proportions, will make the best fertilizer in the world for our Southern lands. He mixes the meal with pure bone-dust in equal proportions, and then adds plaster and salt in smaller proportions, say one pound each of the latter to four pounds each of the former.

Hedging on a Levee.—I have a very low, level farm, in the forks of two creeks, subject to overflow. I am ditching—my neighbors say I have ditching on the brain. I think I will show them that I have corn on the bottom land next fall. I wish to know if hedging on my levees will pay, to strengthen them, and resist the washing. If so, what will be the best hedge to plant, where to get the seeds, the probable cost, when to plant, and what quantity required to plant a hedge a mile long? I want it to answer the purpose of a fence also. Zip.

Alabama.

Will some one who knows reply?

The Best Turn-Plow.—E. G. K., Texas,

wishes to know which is the best turn-plow for deep plowing on his black land. He says: "We would like to break up the land from eighteen to twenty-four inches, but have not yet seen the plow that could do it. It would take from four to six horses to break thoroughly to that depth, and the plow would have to be very strong."

EGYPTIAN WHEAT.—J. H. S. The seed is that of Guinea corn, or some other plant of the sorghum family, and not millet.

ALDERNEY CATTLE.—A correspondent wishes to know where pure-blooded Alderney milk stock can be obtained

THE CHEROKEE ROSE.—Port Orange, Fla. The Cherokee Rose flourishes in almost every hedgerow in the neighborhood of Charleston, but we know no one who has the plants for sale.

MILLET.—I send you by mail a small package of a good and pure variety of millet, which I have always done well with. Should be sown in drills, manured with well-rotted stable manure. I fed last year twelve head of mules on less than a quarter acre, and had much to spare—that is, this patch abundantly afforded their green food.

H. C. M.

FARMING AND STOCK-RAISING.—T. N. W. Greenville or Anderson County would suit your purposes. In Florida, the best stock country is in the southern part of the State, where there are few settlements.

BEE-KEEPING.—A subscriber wishes to know if bees can be kept with profit in the low country or coast region of South Carolina, and, if so, how. Will some one who has tried it answer?

THE PURPLE BEAN.—R. Y. D. What you call "Purple Bean," (seeds of which you send,) is not properly a bean, (*Phaseolus*,) but a *Dolichos*, like our stock pea—probably *D. lablab*.

DOUBLE EGGS.—Do eggs with two yolks ever hatch? and if so, are two chickens produced from one egg? Q.

LIVE WEIGHT *vs.* DEAD WEIGHT.—A reliable London journal mentions that a series of experiments have been recently tried to demonstrate, as far as practicable, the exact loss sustained in the slaughter of different kinds of animals. The following is an approximate result:

An ox weighing 1322 lbs. will be divided as follows: Meat, 671.4 lbs.; skin, 110.2 lbs.; tallow, 88 lbs.; blood, 55.1 lbs.; feet and hoofs, 22 lbs.; head, 11 lbs.; tongue, 6.60 lbs., lungs and heart, 15.33 lbs.; liver and spleen, 20.05 lbs.; intestines, 66.15 lbs.; loss and evaporation, 154.32 lbs.; making a total of 1322 lbs.

Taking the *meat* alone, it will weigh not much over fifty per cent. of the live weight. If we add the skin and tallow, it will be about sixty-two per cent. of the weight of the animal when ready to be slaughtered. It is, therefore, as safe to sell stock at $9 per hundred live weight, as to butcher them, and sell at $15 dead weight, hide and tallow included.

As to sheep, they will average about as follows: Taking one that will weigh 110 lbs., there will be of meat, 55 lbs.; skin, 7 lbs.; tallow, 5 lbs.; blood, 4 lbs.; tongue, lungs, liver and spleen, 4 lbs.; intestines, 6 lbs.; loss and evaporation, 10 lbs.; making 110 lbs.

If mutton is selling at an average of 14 cents fore and hind quarters, the farmer should have at least 7 cents live weight, and anything less than this gives more than a fair profit to the butcher.

LITERARY NOTES.

—— "The Farmers' and Mechanics' Manual," by W. S. Courtney, revised and enlarged by George E. Waring, Jr., is in brief the title of a very useful compilation of facts and figures for farmers, mechanics, manufacturers, builders, painters, plumbers, engineers, etc., which is quite a library of useful knowledge in itself; and one might hunt through several libraries without finding all the information here compressed within the covers of a volume of 500 pages. It is a practical and useful work. Sold only by subscription. Southern Publishing Company, J. C. Derby, manager, Augusta, Ga.

—— Duffie & Chapman, Columbia, S. C., have issued a series of school-books, under the general title of "Reynolds' Pictorial Readers," of which there are four, suitably graded for the different classes. We judge, from the cursory examination we have been able to give them, that they are admirably adapted to their purpose. They are certainly very beautifully illustrated, and printed in the best style. The author is Professor J. L. Reynolds, of the University of South Carolina. Teachers will do well to examine the books for themselves.

—— Mr. James J. H. Gregory, of Marble-

head, Mass., who knows "Cabbages, and How to Grow Them," as well as any man in America, has published a little book with the foregoing title, in which he clearly shows all who choose to read how the thing can be done by others. He describes all the desirable varieties.

—— Wm. Abram Love, M. D., has issued the prospectus of "The Cotton Zone Central Journal of Medicine," to be issued monthly from Atlanta, Ga. He has secured the services of an able corps of contributors—physicians whose actual experience eminently qualify to make the Journal peculiarly interesting to all who have to contend with, or feel an interest in the treatment of, Southern diseases. Terms, $5 a year. Address the editor, Albany, Ga.

—— "Appleton's Journal" is undoubtedly one of the best of all the literary and scientific periodicals of the United States. No paper that comes to our table is read with more interest.

—— "Boston Journal of Chemistry," edited by Dr. Jas. R. Nichols, a scientific practical chemist, and withal an excellent farmer, is worth, to either a farmer or a scientific inquirer, many times the fifty cents a year, which is all it costs.

—— "The American Naturalist," (Salem, Mass.,) fails to reach us, but we learn that it still continues to hold its leading place among journals of its class.

—— "Burke's Weekly for Boys and Girls," J. W. Burke & Co., publishers, Macon, Ga., and Major Thomas A. Burke, editor, is, as it well deserves to be, a favorite with Southern juveniles. We are glad to know that it is successful as well as good.

SCIENTIFIC NOTES.

—— D. Shelby, M. D., of Huntsville, Ala., in the Boston *Journal of Chemistry*, states that sassafras is a perfect antidote to the nicotine of tobacco. The most convenient way to use it is to put a few drops of the oil of sassafras on the end of the segar, or on a pipeful of tobacco, allowing it time to be absorbed or diffused through the whole.

——"Nature" is the title of a weekly illustrated journal of science, published by Macmillan & Co. Its object is "first, to place before the general public the grand results of scientific work and scientific discovery, and to urge the claims of science to a more general recognition in education and in daily life."—*New York Agency 63 Blecker st.*

—— French chemists have proved that fruits—as apples, cherries, currants, etc.—after being gathered, begin to absorb oxygen and give off carbonic acid. They give many details of their experiments; as, for instance, 5 apples, weighing together 348 grammes, yielded, between the 19th of January and the 15th of July, 6,648 cubic centimetres of carbonic acid.

—— M. Cloëz, who is engaged at the garden of the Paris Museum—the world-renowned Jardin des Plantes—has invented what he considers a complete annihilator for plant lice and other small insects. This discovery is given in the *Revue Horticole*, with the endorsement of its distinguished editor, E. A. Carriere. To reduce M. Cloëz's preparation to our measures, it will be sufficiently accurate to say take 3½ ounces of quassia chips, and 5 drachms Stavesacre seeds, powdered. These are to be put in 7 pints of water, and boiled until reduced to 5 pints. When the liquid is cooled, strain it, and use with a watering-pot or syringe, as may be most convenient.

—— The reign of the cotton caterpillar will soon come to an end, if the new "Union Fertilizer and Insect Exterminator" will do what is claimed for it—manure the crop and at the same time keep off the worms. We should be glad to be convinced that it will. It emits very strongly the odor of *carbolic acid.* We are indebted to Mr. Paul C. Trenholm, No. 2 Union Wharves, for a specimen of it, which may be seen at the office of The Rural Carolinian.

ACKNOWLEDGMENTS.

—— Hon. Horace Capron, Commissioner of Agriculture, will please accept our thanks for packages of vegetable and flower seeds. We shall take pleasure in testing and reporting upon them.

—— John A. Scott, Esq., of Greenville, Miss., has sent us some novelties in the way of seeds—peppers, beans and squashes—for

which we tender our thanks. We shall try to give them a fair trial here.

—— We are indebted to Mr. Jas. Vick, of Rochester, N. Y., for a fine collection of flower seeds, and for his elegant catalogue and floral guide—a manual of flower gardening as well as a list of all the most desirable plants. He has taste as well as skill in his profession.

—— A. B. C. Lindsay, Calhoun's Mills, S. C., H. C. Mitchell, of Seal's Station, Ala., and others, have our thanks for millet seed.

—— Mr. Wm. L. Lewis, of Lawrence County, Ala., will please accept our thanks for seeds of the American Papaw, (*Asimina triloba.*)

—— Some one has sent us a package of cotton seed without giving us either his own name or that of the variety of cotton.

—— We are under obligations to Dr. A. P. Wylie, of Chester, S. C., for rooted vines and cuttings of his new hybrid grapes.

INDUSTRIAL ITEMS.

——J. C. Delavigne, of New Orleans, has invented a steam plow, calculated to move back and forth across the field to be worked, forming its own roadway and cultivating the ground "in lands" between the tracks which are to be permanent. The inventor believes that it will plow from ten to fifteen acres per day, and harrow or cultivate three times as much.

——Mr. A. Entychides, of Angora, Asia Minor, says, in *American Stock Journal*, that during the last three years a great quantity of Mohair [Cashmere] Rams and Ewes have been shipped to and sold at Port Elizabeth, Cape of Good Hope, for £90 to £85 each, ($400 to $450,) and that since then that port exported to England, Mohair, as follows: In 1867, 19,992 lbs.; in 1868, 90,295 lbs.; in 1869, 344,634 lbs.—which quantity is likely to be doubled in the next five years. This great success of the colonists of the Cape of Good Hope, in producing such a valuable article, (which sells readily in England at four shillings per lb.,) has raised his ambition, he adds, to be instrumental in establishing the breeding of this beautiful animal in the United States.

——Colonel Baylor, of Georgia, aided by a party of gentlemen in Boston, has been for some time conducting a series of experiments upon the sweet potato, with a view to still further utilize this best of all vegetables. The results are said to be satisfactory and important. The articles produced in perfection are starch, dextrine, a very valuable article, which may be called sugar-powder, and also a sweet, delicious vegetable flour.

——Excellent paving-stones, superior even to those of native porphyry, are now made, in France and Belgium, from the slag of the iron blast furnaces. They have stood the test of the heavy travel in some of the streets of Paris and Brussels.

——The Island of St. Helena is now growing cinchona trees of the best and most prolific varieties—no fewer than four thousand of these having lately been planted, with every promise of success.

——We lately had the pleasure of testing sorghum under a new aspect. Some unbolted flour from the seed was handed to us by Mr. F. G. Cart, from which we ate excellent batter cakes, not inferior to those made of buckwheat. It also made passable biscuits. It is worthy of further trial as a breadstuff.

MERE MENTION.

——Mr. A. Entychides, a native of Angora, Asia Minor, is importing Angora or Cashmere goats into the United States and selling them—warranted pure bred—at $125 each.

——Professor Shepard has in his possession at the Medical College, Charleston, the lower jaw of a young male mastadon, dug up at Phosphateville, on the Northeastern Railway. The jaw is about two feet long.

——We lately witnessed at the refinery of Mr. F. G. Cart, in this city, some very satisfactory experiments in the manufacture of syrup and sugar from sorghum. The process made use of was that known as the Southern process.

——The Agricultural, Mechanical and Blood Stock Association of Texas, will hold its first Annual Exhibition at Houston, May 17th–20th. The list of premiums is liberal and well arranged, and should command the at-

tention and support of farmers and manufacturers interested.

——Washington Territory boasts of an immense cranberry marsh, yielding one hundred thousand bushels in a single crop.

——It is stated that the Percheron horses, introduced into Central Ohio within the last few years, are giving good satisfaction, and are being bred to more extensively this year than at any previous one.

——Chestnuts form a considerable article of cultivation with the farmers in the south-east of France. In 1863 the exportations amounted to 16,000 tons, representing two and a half millions of francs.

——From 1850 to 1861, the sugar planters of Louisiana produced an average of about 41 per cent. of the whole sugar consumed in the United States. From 1861 to 1869, the average was only about 5 per cent.

——Dr. Augustus Voelcker, in the *Journal of the Royal Agricultural Society*, England, 1868, gives the composition and nutritive value of *Trifolium striatum*, a new kind of clover. From this description, it seems quite probable that this clover would prove successful in some of our Southern States where the common red clover does not succeed.

——The Springfield (Mass.) *Republican*, says Ayreshire cattle are rising in public favor, several importations having been recently made into the United States and Canada.

——A milk-weed grows wild in California, the fibre of which is as strong as Manilla hemp, and as fine as linen. It is believed that it can be utilized.

——A French agricultural paper says that the culture of the beet is worth as much to a country as a fertilizer as it is for its product of sugar, the pulp being more valuable than the saccharine material extracted.

——A manufactory of castor oil has been established at Galveston, Texas, and five cents a pound is the price paid for beans.

——A Castor Oil Manufacturing Company has been established at Gonzales, Texas. It ships 150 gallons a week, and would do more if the beans could be procured.

Correspondence.

NOTES BY THE WAY.

Enclosed I send you a few imperfect pods of a plant grown near this place by a Dane, who calls it the "Silk Plant." The seeds tiller, and grow very like the coarse ragweed, and each stem will produce a couple dozen or more of pods very closely resembling the cocoon of the silkworm. The pods contain a closely imbedded roll of silky fibre, like the swamp "Cat-tail," so common in South Carolina, and on the end of each little fibrous particle is a seed very similar to flaxseed. The bush or weed before ripening the pod bears a beautiful flower. It is killed down by frost, but springs from the root again. The owner got it from a friend, who received it from another friend, who saw it cultivated in China to mix with the silk procured from the silkworm, in making silk fabrics. Can you give our readers its botanical history?

In this section the Lespideza is considered quite a rarity, and is sought after. Cannot some of our numerous idlers, in hunt of work (?), find employment by gathering the seeds of this plant and shipping it westward. I have never considered it an advantage to our country, and yet in this section I have seen beds of it set out as we do the sweet potato in South Carolina. I have often been asked the value of this grass. I reply it is a beautiful sheep pasturage from April to November, in South Carolina, and is eaten freely by cows, horses, mules and hogs. In the fall of the year it will salivate mules or horses, as does the second growth of clover. It will often lodge the seed on the sides and in the bottoms of gullies or bald spots, and not only prevent further washing but actually fill up the gully. I have called it "pest," because it has trespassed upon my clover lots, and proven itself too much for red clover, as it does for broomsedge, weeds, and grass of all kinds.

To-day I paid a visit to our friend Hunziker, who is a jovial Swiss, who treats his friends to wine of his own making, or rather of his wife's making, and who is provokingly interesting on the subject of the ramie plant. He has about three acres and a half well set in this plant, and is very hopeful of making it a complete success. I enclose you a sample of the raw fibre, a specimen of linen made of his ramie and cotton; also, a sample of colored poplin of same material. It is only a question of time as to the success of this plant. Where it can be grown so cheaply and utilized so economically it must succeed. Disabuse the Southern mind of the idea, that cotton alone is the only plant that merits our purse, as well as our attention, and we will make the ramie and kindred plants matters of national

revenue. A planter thinks it his duty to erect a gin-house, and build a screw or buy a cotton-press, if he plants a crop of cotton. But the same man would think it throwing away money to invest half so much preparatory to growing the ramie. And why? Simply because the experience of others teaches him cotton will remunerate the planter for the investment; of the ramie he is ignorant, and the Southern mind was always averse to novel enterprises. Such men as Mr. Hunziker are needed amongst us, and I say success attend his efforts.

Mr. Hunziker showed me also the "Vegetable Pear," a vegetable he grows similarly to the butter-bean, but resembling the Irish potato in shape, and the white yam potato in color and size. Have any of our readers any knowledge of this plant? Will not Mr. H. tell us of its uses, etc. D. W. A.

SOUTH WESTERN GEORGIA.

Editor of The Rural Carolinian:

In your March number a communication written by Colonel D. Wyatt Aiken, and dated at Thomasville, Geo., has the following paragraph:

"The geographical aspects of *this* country are by no means inviting. Its tall pine trees and *level* territory are distressingly monotonous; and, as seen from the cars, *nowhere* impress the traveller with *local enterprise or thrift.*"

The italics are my own, to show the corrections I desire to make.

I do not suppose Colonel Aiken *intended* to injure this section of the State of Georgia, yet the above statement is well calculated to do so by discouraging immigration. Although his communication was dated at Thomasville, his remarks do not apply to Thomasville, or to the country within fifty miles of it on the road he travelled, but to a section of country *two hundred miles distant*, (the sea-coast,) as appears by his allusions to the "*rice-fields.*" He mixes up the "rice-fields" and the "level" regions of the coast with the locality from which he writes, it is true, but he presumes upon the geographical knowledge of his readers to make the distinction. This is, to say the least, a doubtful method of conveying proper information, and as there are many of us interested in this section, we are unwilling to rest under the imputation of inhabiting a "level," monotonous, uninviting territory, and devoid of all "local enterprise or thrift." This section is not "level," but gently undulating, abounding in pine and oak forests, with abundant streams for water-power. As for "enterprise," we have a town of at least 3,000 inhabitants, constantly increasing and improving; and, besides the Atlantic and Gulf Railroad, we have the South Georgia and Florida Railroad, now completed within an hour's ride of Albany, a distance of *sixty* miles, which will connect us with Eufaula, Ala., Macon, Ga., and all the great Southern lines of railway north of us. On his way from Savannah to Thomasville, Colonel Aiken passed over 200 miles of railroad, (the Atlantic and Gulf,) and although he found the country so "monotonous and uninviting," if he had stopped over a day about *midway*, he would have been astonished at the *number* of heavily laden trains thundering along the track from Florida and from *this* section. The road last year increased $281,000 in *six months;* and, what must surprise your correspondent, this great increase is traced to the legitimate business of the road with the *country along the line.* It is true Colonel Aiken has not denied any of these things, but he did not *mention* any of them, and left the contrary inference—hence the necessity of this trespass upon your columns.

THE RURAL CAROLINIAN is a welcome visitor in this section, and we desire to see ourselves earnestly represented in its pages.

Very respectfully yours, etc.,

GEORGIA.

Thomasville, Ga., March 24, 1870.

A NEW NATIVE CONIFER.

To the Editor of Rural Carolinian:

I send you a rooted plant of *Juniperus communis*, which is a new native conifer added to the Flora of our State, found here last summer growing on the sandhills not far from Aiken.

There are two varieties of this plant, the upright and trailing form. This is a trailing form, which is most generally the Alpine or high mountain variety. Our plant differs, however, from the Alpine form, in the larger and more rigid leaves, less prolific in fruit, berries smaller and more dry, thus showing more distinctly the triquetrous crown.

There are two patches of it thus far discovered, growing about one hundred yards apart, and covering each a space of fifteen or twenty feet square. The shoots seem to be of rapid growth, and trail on the ground, striking root and forming new offsets. One of these trailing limbs I measured was eight or ten feet long.

Professor Gray, in his Manual of Botany, says of *Juniperus communis:* "It grows on dry, sterile soils, New Jersey to Maine, eastward, northward, and along the Great Lakes." In Europe this species has a wide range of latitude.

There appears to be every indication of its being a native and indigenous to the soil, as it grows in virgin forests, with pines and other hardy natives. It could not have been a cultivated plant remaining from some old settlement, as there are no signs of habitation

near by, or of the ground ever having been cleared. It is true, seeds may have been dropped by birds, but it is very improbable that seeds of a cultivated exotic evergreen, of Northern habits, could have established themselves with such vigor and luxuriance in our dry sandhills, and resist so successfully the inroads of the hardy surrounding vegetation.

It is an interesting addition to the Flora of our State, never having been found so far south by any of the Northern botanists; and, from its luxuriant and rich foliage, in winter, may prove well worthy of cultivation.

H. W. Ravenel.

RHAE AND RAMIE.

Our friend, J. R. Dodge, Esq., the zealous and able statistician of the Agricultural Department at Washington, sends us the following note on the "Rhae." We are not at present prepared to express any opinion upon the botanical questions involved in the distinction, (if distinction there be,) between Ramie, Rhae and *Chou-ma* or China grass. When we shall have grown these nettles side-by-side, we may be in a condition to speak understandingly on the subject:

D. H. Jacques, Esq.: I observe that some editors are publishing notices of the "Rhae" plant. It is nothing but the *Rhea*, which is the Indian name for *Boehmeria nivea*, as Rami (ramie) is the Javan, and *Chou-ma* the Chinese. Every country in which that textile nettle is grown has a different name for it; yet there is less difference than there is between the different sub-varieties of wheat in this country. A most remarkable confusion has been created by these local names of *B. nivea*, all of which are practically synonyms. D.

KEEPING IRISH POTATOES.

Mr. Editor: I see that "Mrs. W. B. R.," in your April number, inquires for the best manner of keeping Irish potatoes. I am a great lover of that vegetable, and consequently I always try to keep them in good condition. For several years I was not very successful, nor was I until I adopted the following plan: My house is about forty feet square, and about three to four feet from the ground, with occasional *pillars* to support it, so that there is a free circulation of air, at all times, under it. When my potatoes are fully ripe, which is known when the tops die, I dig them carefully, removing them *immediately* into a *shady* place, where I assort them, leaving for preservation none but those which are perfectly sound and not at all injured with the hoe. I put the sound ones under my house, scattering them so that they will not touch each other, and let them remain there until there is danger of their freezing.

I have a large box under my house, made on purpose, into which I put my potatoes in the following manner: First, a layer of *perfectly dry sand*, and then a layer of potatoes, not allowing one to press on another, then alternately a layer of potatoes and sand, until my box is filled, which will hold some thirty bushels. Adopting this course, I do not think I have lost a peck from rotting in five years, indeed, I have no fears whatever in regard to keeping or preserving my potatoes, and I often have an abundance until after planting time in the spring. The only trouble is in having *dry sand*, for if it is the least damp the potatoes will sprout. Last fall I put up in this manner my seed for planting this spring, and when I took them out to plant not one of them was in the least injured, and the same was true with regard to my eating potatoes. I give this as the result of my experience, and for what it is worth. Isaac Branch, M. D.

Abbeville C. H., S. C., April 1st, 1870.

CANNED FRUITS.

"Observer," on page 250 of The Carolinian asks, "Why need we buy all our canned fruits at the North?"

As an experiment, I took common glass pickle jars, filled them with nicely pared and quartered full ripe peaches, put the jars into cold water on the stove, then lighted my fire, and let the jars stay in the water till it had boiled about one minute. I took out the jars, saw that each jar was full as could be corked, drove the cork down so as to leave space for one-eighth inch thick of wax on each cork. I then poured melted rosin on each cork till that space was filled, and set the jars away to cool. When opened on Christmas they were as good as any canned peaches ever put up North or East.

I tried Scuppernong grapes also. The grapes were nothing to brag of, but the juice of the grape in these bottles was nectar.

A. C. Steede.

Americus, Miss., January 31, 1870.

CATERPILLARS AND CUT-WORMS.

Mr. Editor: Could not some writer give a better mode of destroying the tent caterpillar than the torch? It really looks cruel, they writhe and appear to be so tortured. I was out a morning this week superintending their destruction in the orchard. They are certainly an industrious family, at least they make way with the leaves on a tree very fast. We are taught that everything in creation has its use, and of course they must have

theirs. If it is not to teach man patience, I can't tell what it is. I suppose, though, they serve as dainty meat for the feathered tribe. I am entirely willing that the little birds shall have them, but it will not answer to leave them our fruit trees for their benefit.

This is also the season for that other pest, the cut-worm; how annoying to find your finest plants or vines lying limp and withered! Is there no remedy for them but the slow process of looking them out every morning? Some have recommended manuring with china berries, as a means of destroying them—it has not proved successful in my garden. I have used them more or less every season, but find no diminution in the number of worms. MRS. G. E. M.

Crusoe Valley, April 14th.

SIEMPRE VIVRA.

In the November number of THE RURAL CAROLINIAN is an interesting notice of this remarkable Mexican plant. It also grows in Texas, in the crevices of rocky walls along the Rio Grand. It belongs to the club-moss family or the Lycopodiacea of the botanists. Its botanical name is *Lycopodium dendrolobium.*

About ten years ago we had several specimens of it, which we kept for a long time on a shelf with the leaves curled up in a globular mass of a pale green color, and to all appearance dead. On placing the roots in a saucer of water, the leaves would soon begin to unfold and resume a brighter green, and in about thirty minutes the whole plant would be full of life, vigor and beauty. When taken out of the water and again placed on the shelf, it would soon fold up its leaves, resume its sleep, and be to all appearance again dead.

Our specimens of it were left with the State Natural History Collection, at Austin, in 1861, when our geological survey was suspended. During the war they were taken away, and we have not since seen them.

S. B. BUCKLEY.

Austin, Texas.

EMIGRATION OR IMMIGRATION.

Mr. EDITOR: "Low Country Farmer" prefers, first, immigrants from abroad, Northerners, second, etc., sees no benefit to be derived from the settlement of those of our own people who are not land-owners or want better lands than they have.

"Low Country Farmer" surely does not know that hundreds of our best citizens are going West every winter, hunting, not better, but *cheaper*, lands, and thus a continual drain is kept up from year to year from the population of South Carolina. Why is this? Because the best lands of the State are locked up in the hands of a few men that were once "big planters." These lands are to-day not contributing to the prosperity of the State more than one-fourth that they would if settled up in small farms and properly cultivated. Where is our laboring white population? (by far the best that we now have.) Settled out on the poor ridges. If one trys to buy better lands, he gets "Low Country Farmer's" answer, "Bring on your cash," and asks enormous prices for it at that. Progress and onward being the watch-words of the hour, he is determined to get where he can realize more for his labor. He bundles up and pushes westward, where he finds accommodation and settles, and becomes a permanent citizen of another State. He induces others to follow him, and thus the current flows on, more going out than comes in.

Land-holders of South Carolina, stop this first, and then push your immigration schemes to their utmost, and you will promote your own interest as well as others.

UP COUNTRY FARMER, No. 2.

CULTIVATING CORN.

Mr. EDITOR: The experience of a successful farmer, if well, plainly and honestly reported, is of incalculable benefit to his neighbors. I claim to talk honestly, and I hope to speak plainly in the description of my mode of cultivating the corn crop.

Say the land was cultivated in cotton or corn the last year, I commence by opening the alleys with two furrows, using a twister plow, to the depth of eight inches, and strew or broadcasted *live* cotton seed to the amount of 180 (200 would be better) bushels to the acre, right down at the bottom—yes, at the bottom of these deep furrows, in last of February or first of March, hauling all corn stalks, pea-vines, grass and whatever other litter there is on the land into the furrow, thus covering it up. This is best done with the hoe, but that is slow work for these times, and the plow, in most cases, will be substituted.

The corn is planted in the usual way, and I may add, cultivated in the usual way; always remembering that no grass or weeds be allowed to exist, and moreover, and more particularly, that the *last* plowing should be when the plant is *heading* to put forth the silk and tassel.

The plowings should be deep at the time of the preparation of the land, and the first three workings, but shallow afterwards.

The great objects attained by this mode of culture are, first, the plant never fires from breaking of roots at a critical time; secondly, that it does not fire from drouth, as the roots are eight inches below the surface; and, thirdly, that the plant though not stimulated to a rapid and vigorous growth at first, as it would be by concentrating all the seed in the hill,

(the old system,) yet progresses slowly but surely to produce, not a large stalk, but a good yield of grain. The rootlets *gradually* expand themselves into the seed at the bottom of the furrow, and by the time the plant is making the grain, all the roots have taken entire possession of the seed, and the consequence is a large ear or ears.

I will simply add that for twenty years under *other* management, I had to buy more or less provisions yearly, but that, after adopting the above mode, I as regularly had an abundance, and often sold provisions.

D.

CLOVER ON SAND.

"*Did you ever see Clover growing in the sand?*"

A. S., in his article in the April number of THE RURAL CAROLINIAN asks this question, and answers it, apparently, to his own satisfaction, and it may be to that of others also, who never have been in the locality described by him, where it does grow—I can testify to that—and the name White Bluff would certainly imply sand; but if A. S. had examined the soil on the sides of the road to White Bluff, where the clover grows, he would have found it a rich compost, composed of swamp mud, decayed leaves, etc. The road lies through very low, swampy land, for a great part of the way, and it is on this land, densely shaded by overhanging trees, that the clover grows. If A. S., or anybody else, has succeeded in raising clover on high, open cotton land, for example, and can prove that it will outgrow and smother out joint-grass, broom-grass, etc., and will keep green when the other grasses get burned up, he will then be a public benefactor indeed, which I do not think the person who introduced *Lespedeza Striata* has proved himself. Speaking of this latter, I must remark that I planted some that I procured from the Patent Office last year, during the summer it grew a *little*, but did not spread. In the fall it died down, and I have not seen it since.

PLANTER.

Beaufort, S. C., April 12, 1870.

DISEASES OF THE HORSE.

MR. EDITOR: I have noticed with pleasure communications from some of your correspondents concerning the diseases of the horse, and the remarkable cures resulting from treatment, etc. We think such information indeed highly useful. An animal so valuable to man as the horse, deserves more careful consideration than we have heretofore given him. His worth we all know something about, but very few of us properly appreciate it. His diseases are as diversified as those of man, and, in a great measure, analogous. No doubt many good horses have been sacrificed on account of our imperfect knowledge of the diseases to which they are liable and the manner of treatment, while, with a little study, we might make ourselves familiar with many of their ills, and thus be able to relieve them from extreme suffering, and often, perhaps, from death; besides, it is as much the duty of the rural economist to study the hygienic laws, and apply them to the horse, as it is the duty of the medical profession to provide for the preservation of the health of mankind.

A morbid indisposition in the horse is as manifest as in man. We have often seen this disinclination in the horse to engage actively in his daily business; and you have, perhaps, as often attributed it to laziness, but if his diseases were thoroughly understood, and the necessary pains taken to correct those diseases, we might have less reason to complain of lazy horses; and as THE RURAL CAROLINIAN enjoys a wide circulation, we hope that its patrons will continue to contribute their experience to each other in the management of the sick horse. I give the following, which came directly under my observation:

The horse, apparently healthy, was ridden at a very rapid gait about six or seven miles—was fed heavily on corn, and permitted to drink water freely; in a few hours was taken with violent pains in the abdomen, indicated by moaning and tossing his head from one to the other side of his body, lying down and wallowing, general anxiety and restlessness, relapsed condition of the bowels, etc.; continued in this condition some seven or eight hours, when the following was suggested:

R. Sulphate of Morphia... .....gr. i½,
Water.....drs. iv,

given as a drink. The effect was almost instantaneous. In about half an hour's time the horse was grazing, and, with the exception of the shock sustained from the attack, he was again as well as ever.

J. W. S., M. D.

Silver Street, April 11, 1870.

CASTRATING HOGS AND BULLS.

Editor of The Rural Carolinian:

For the guidance and benefit of those who have large male hogs to castrate, I submit the following plan:

With a sharp knife split the skin and inner covering of the testicles, cut loose everything except the spermatic cord, then with a short piece of small cotton twine pass a ligature around the spermatic cord, as high up as you can, conveniently, then cut the cord between the testicle and ligature.

It may not be generally known, that in severing the spermatic cord an important artery is also cut, from which if the hog or bull be an old one, profuse bleeding ensues

and sometimes death. By following the above plan, the animal will not lose an ounce of blood, and will eat the moment he is released from the hands of the operator.

J. T. G.

Muscogee Co., Ga., March 14, 1870.

JAPAN PLUM.

Throughout Southern Louisiana there grows an evergreen fruit tree similar to the green bay, with long, thick, coarse leaves and gray body, resembling the maple, or sour wood of the Atlantic States. This tree bears in clusters—from four to twenty on the extremities of its limbs—a pear-shaped fruit, averaging about the size of a "lump of chalk," *i. e.*, smaller than a guinea hen's egg, that is perfectly yellow when ripe, has flesh more resembling a mellow apple than a plum, and in the centre, two, three or four small round kernels, about the size of hulled pindars, and perfectly slick.

This tree blooms in November, the fruit begins to ripen in March, and continues ripening until June or even July. Through all these months, the trees present tempting baits to the lovers of good fruit.

The tree is a very hardy one, and a sure and prolific bearer. It is said to have been introduced into Louisiana by Commodore Perry, on his return from his famous Japan expedition, and hence is called the Japan plum. The purpose of this inquiry is to learn whether this fruit is known elsewhere in the South, or whether it has ever been transplanted into any other of the Southern States with success. Once climatized into the Atlantic States, nurserymen would find it a valuable acquisition to their list of fruit trees, because it yields a delicious fruit even earlier than any of the berries. FRIEND.

La Hatchie, La.

BONNET SQUASH.

D. H. JACQUES, ESQ.: Enclosed you will find a few seed of what you name, in the April number of THE RURAL CAROLINIAN, *Bonnet Gourd.* I have known it for twenty-five years, but under the name of *Bonnet Squash.* I have grown it every year since 1866, chiefly for its use as a sponge, to which I think it far superior. It is a rapid and vigorous grower, and its foliage is very beautiful, which qualities render it one of the best "climbers" for summer shade. It should be planted as soon as danger of frost is past, as it requires a long season to perfect the seed, those only being thoroughly matured which are black. They should be planted in very rich ground, and the vines be well supplied with supports. I think I have some seed of the Papanjay also, judging from your description, and will send some of them also, if I can find them. The seed were given to me by a small farmer in St. John's Berkely, who called it "Running Okra." I have never eaten it nor the Bonnet Squash, which you state is also edible. The vine of the "Running Okra" is quite similar to that of the Bonnet Squash, though the leaves are much lighter colored. I omitted to say that I send the seed for distribution among your friends, as you stated that you had none to distribute.

Very respectfully,

R. Y. DWIGHT, M. D.

Blackstock, S. C.

THE TEXAS SADDLE.

MR. EDITOR: Travelling a few days since in company with some gentlemen from your section of the South, our conversation ran generally upon the subject of stock, and rearing cattle, horses, etc. One South Carolina friend remarked he had often wondered why the Texans always rode such huge saddles, and why the Texas saddle always had a "horn" in the front or on the pommel?

As this finish has a reason, I hope it may be of utility to your thousands of readers, to know why the Texas saddles are always thus made. In riding over the pampas of our State, hunting wild horses or cattle, or even in looking through a herd of cattle for the Eastern market, the rider invariably carries his "lasso" (a rope about thirty feet long, with a noose or slip knot on one end) tied to his saddle.

One end of this "lasso" is tied firmly to the horn of the saddle, and the lasso itself carried in the hand when about to be used. The purchaser of cattle for market, while riding through an immense herd of fine beeves, wishes to select one, for instance, that is rather wild and cannot be driven, he charges his horse up to this beef, throws his lasso around the horns or neck, and immediately checks his horse. The beef pitches off at a fearful rate, but the rider, with complete control, only allows him the length of the lasso, for as soon as he observes he has caught the beef, he turns his horse in an opposite direction, and puts off at full speed. The beef of course resists with all his power, but it is no use, for the momentum of the horse and rider soon overcomes him, and he follows, *nolens volens*, the direction of the lasso, at half speed.

I have seen the mustang ponies so thoroughly trained to this business, that the moment the lasso was thrown, they would whirl and go at full speed in an opposite direction; and as soon as the weight of the beef was felt on the rope, the pony would bend to the draught like a dray horse to his collar. Hence the necessity of the horn and the cumbersome leverage girths always attached to the Texas saddles. PLANTER.

Belleville, Texas.

Department of Rural Architecture.

AN IMPROVED STABLE.

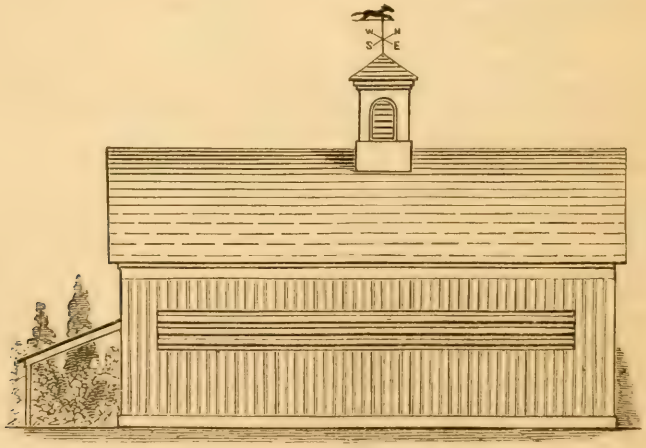
With the improved system of farming, now slowly but steadily gaining ground in our Southern land, the desire is springing up for improved farm buildings and better stock. When the idea that "Cotton is king" prevailed almost universally, and every other interest was made to yield to the production of that one crop, any remonstrance in this behalf met with the almost invariable reply, "Oh, one big cotton crop will remedy it all!"—would buy hands—buy stock—buy provisions.

But it is found now, under a new and better system of farming, that it is economy, not only to make provisions on the farm, but also to keep only *good* stock—that one strong fat mule or horse is worth more than two poor weak ones, and costs less to feed—that a cow giving from twelve to twenty quarts of milk per day is really cheaper than four or five giving from two to four quarts. In order, however, to keep such stock and make them profitable, it will be found that there must be a change in the mode of treatment. They cannot, where the best results are desired, with impunity be exposed to the uncertainties of our very variable climate, with only a rough open shed to protect them, or, as has too often been the case, with only a rail pen to enclose them.

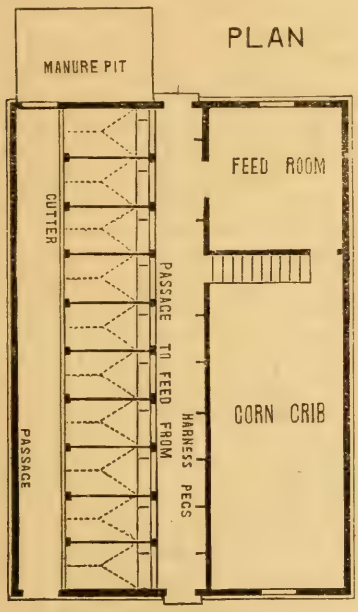
Physically, our stock have an organization, in many respects similar to our own, and, though more hardy by nature, are subject, in a greater or less degree, to the same diseases, and should therefore be protected and guarded in a corresponding degree.

The horse, in particular, is liable to a great variety of diseases, a great many, if not all, of which may be prevented by a proper regard for their comfort, and a judicious course of treatment.

But it is not my intention to enlarge upon the general hygienic and utilitarian treatment of the horse and other farm stock. Leaving that to wiser and more competent hands, I only now propose to offer a few suggestions as to the proper construction of stables on an economic plan, and in a manner



calculated to secure comfort to the inmates and to lessen the labor and economize the time of the attendants, for illustrating which suitable drawings are annexed.

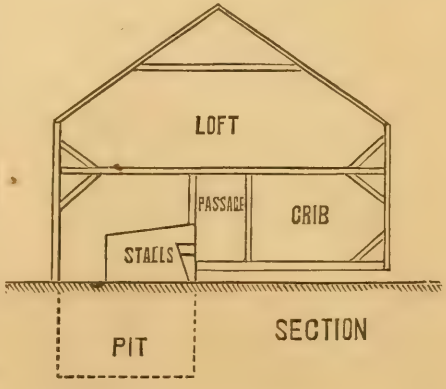


The primary consideration, with stock, as with the human family, is pure air and a plenty of it. Consequently, no location should be selected for a stable that would be altogether inappropriate for a dwelling-house, and in the construction of the house due regard should be had to a free and proper ventilation—the walls should be closely weather-boarded, and latticed openings inserted, if practicable, on the southern and western faces of the building, and at a sufficient height to protect the inmates from the injurious effects of strong draughts.

The next most important consideration is the protection of the feet. No animal, which stands night after night with its feet buried in mud and the accumulated filth of the stable, can have sound, healthy hoofs. The floor should be packed *hard* with sand and clay, compacted by a *little* lime, if neccessary, or, what is perhaps better, be boarded with thick plank, firmly pinned down. The flooring of the stalls should be sloped gently to the centre and rear, as is indicated by the dotted lines in the plan, so that the liquid excrement may be carried promptly to a gutter, extending the whole length of the stable, and connecting with a compost-pit in its rear. The solid excrement will, of course, have to be removed by hand, which should be done daily.

There is another danger to which stalled animals are frequently exposed, and very rarely taken into consideration in the construction of their dwelling. The space immediately under the roof is almost invariably used as a fodder-loft, and, the flooring of this loft being generally of plank loosely jointed, if at all, quantities of dust, with small fragments of fodder, are continually sifting through the cracks. These siftings, besides interfering with the healthy porosity of the skin, penetrate into the eyes and ears, producing weak eyes or blindness, with a variety of other diseases. To avoid this, the loft should either not be used for *any* purpose, or the stable room should be ceiled overhead with tongued and grooved plank.

Another objectionable, and still too common, error is feeding from a rack. This is liable to the same objections as placing forage overhead, and to the additional one of causing the horse to take his food in an unnatural position, thereby causing injury to his general carriage. The section drawing hereto annexed exhibits the mode best adapted to secure the comfort of the animal in taking his food—namely, a close box, running into the wall at the bottom, so that the dust and siftings from the forage will



collect in the acute angle at the bottom, out of reach of the horse. (Where cut food is used, which should always be done when practicable, a flat bottom should be inserted one-half or two-thirds the depth of the box.) The corn-bin, as will be seen, is cut off at one end of the box.

In the building represented by annexed drawings, 19,000 feet lumber are to be used, which, at $1 50, would cost.....$285 00
Sheathing and shingles..... 180 00
Workmanship..... 300 00
Nails and hardware..... 40 00

Total cost.....$805 00
Cost of properly constructed manure-pit..... $50 00

The stalls should be built of two-inch plank, morticed into posts, and secured with wooden pins. Where it is possible to avoid it, nails should not be used about the stalls and fixtures.

ALEX. Y. LEE,
Architect and Civil Engineer.
Columbia, S. C.

Department of Literary Miscellany.

BETTER LUCK ANOTHER YEAR.

A LAY OF ENCOURAGEMENT.

I.

Oh! never sink 'neath Fortune's frown,
But brave her with a shout of cheer;
And front her fairly, face her down,
She's only stern to those who fear!—
Here's—Better luck another year!
Another year!
Aye, better luck another year!—
We'll have her smile, instead of wile,—
A thousand smiles for every tear,—
With home made glad, and goodly cheer,
And—better luck another year!
Another year! Another year!

II.

The damsel Fortune still denies
The plea that yet delights her ear;
'Tis but our manhood that she tries;
She's coy to those who doubt and fear—
She'll grant the suit another year—
Another year.
Here's—better luck another year!
She now denies the golden prize,
But, spite of frown, and scorn and sneer,
Be firm, and ye shall win and wear,
With home made glad and goodly cheer,
In better luck another year!
Another year! Another year!

W. GILMORE SIMMS.

THE WONDERS OF THE DEEP.

Prof. De Vere's fascinating book, under the above title, opens with this graphic sketch of the depths of the ocean, which reminds one very strongly of parts of Victor Hugo's "Les Travailleurs de la Mer:"

"The great sea has its mountains and its deep valleys, with forests of weird, waving plants on the former, and, far down in the dark dells, masses of dismal debris, wrecks of vessels and decaying bodies of men. There lies, half covered with a crust of lime and hideous green slime, an ancient gun shining in sickly green; here, half hidden, a quaint box filled with gold that was picked up amid the snows of the Peruvian Andes, and scattered over all a motley crowd of oddly-shaped shells. The empty skull of an old sea-captain has sunk down close to the broken armor of a huge turtle, and a deadly harpoon rusts and rots by the side of the enormous tooth of a walrus. Still further down 'in the lower deep of the lowest,' lie countless bales of Indian silks, in which large schools of fish dwell peacefully now; and over all, the silent currents of the ocean move incessantly to and fro, while millions of jelly fish throng every wave to feed the giant whales, and immense hosts of herring dash frightened through the waters to escape the voracious shark. * * * In one place the waters foam and the waves break without rest or repose against oddly-shaped cliffs, which do not rise sufficiently high to be seen above; in another, they wash slowly and sadly against a wide desert of white sand. Where lofty mountains rise from the depth to a height not inferior to that of the tallest of Alpine summits, and vast forests of sea-tang clothe them in brilliant green, the sea circles mournfully all around in ceaseless windings, while further on, where the valley sinks into the very bowels of the earth, and eternal darkness covers all with its mysterious mantle, the waters themselves are hushed and apparently motionless, as if awe struck by the unbroken silence and the unfathomable night below.

"The earth, it has been said, is one vast graveyard, and man can nowhere put down his foot without stepping on the remains of a brother. This is not less true with regard to the ocean. It is an ever hungry grave, in which millions and millions of once living beings lie buried, and new hosts are added from year to year. It is the stage on which murder and maddest conflict are going on without ceasing. Immeasurable hatred dwells in those cold, unfeeling waters—and yet for a good purpose, since it is only through this unceasing destruction and change that life can be maintained in the crowded world that dwells in the 'waters below the earth.' The sea has its lions, its tigers and wolves, as well as the earth above,

its crocodiles and gigantic snakes, which daily sally forth to seek their prey and murder whole races; it has its medusæ and polypi, which spread their nets unceasingly for smaller fry; while whales, and their kindred, swallow millions of minute beings at a single gulp, sword-fish and sea-bears hunt the giants of the lower world, and wretched parasites wait their opportunity to enter the fatty coats of huge monsters. Everything is hunting, chasing, and murdering, but there is heard no merry 'Tally Ho!' no war-cry encourages the weary combatants; no groan of pain, no shout of victory, ever breaks the dread silence. The battles are fought in dumb passion, and no sound accompanies the fierce conflict but the splash of foaming waters, and the last spasmodic effort of the wounded victim."

FARMER RAY.

Ezekiel Ray, the farmer, came last week
To see our Adam plowing in the rye;
He rode his little sorrel filly, Jude,
Whose shining neck, curv'd to a saucy bow,
And beautiful lithe limbs contrasted strange
With the good farmer's mighty arm and hand,
And coarse brown leggins snugly button'd up—
"Well, Adam, that's a noble yoke of thine;
I like them best of all for draught—ah, look!
The red one's neck is galling with the yoke:
Rest him a little: better far to lose
A little time than that he work in pain;
I never could endure the sight of it,
Nor of the farm-horse poor and broken down."
And here the farmer look'd on freakish Jude,
Standing her best to please his partial eye.
"Yes, Adam, well your father knew my stock,
And how I loved a trim symmetric horse
With free unbroken spirit. Once I knew
A serving-man who came to me from town,
Crack'd up for ready knowledge of the horse;
(I well recall he had a pocketful
Of commendations from this man and that—
As to his art of training, and the like,
Also for usefulness about disease,)
But somehow I liked not his talk—a brag
I never could endure—and he was one;
I marked that down: 'a true tried man,' I said,
'A man of work and worth talks modestly,
Not calling the thing done a miracle
That no man living but himself can do,
But letting *the thing done* speak for itself.'
But he seem'd reckless, and his little eye
Now grew irresolute beneath mine own,
And I distrusted him, but took him in,
Distrusting more my own poor blind distrust;
Well, sure enough, a week had scarcely passed,
When late one evening Zekey came to me
With news that two-year-old had broke her leg,
Training;—and when the *all-accomplished* came
Late in the night with his official tale,
The brute was drunk, and in the moment's wrath
I hurl'd him, head and heels, into the night
And never saw him more."
"You served him right,"
Said Adam, lifting up the brighten'd mould,
"Such cruelty deserved its punishment;"
"And truth he got it," said the Farmer Ray,
His grey eye flashing lightning to the thought.
"And so we spliced and bound the broken *limb*,
And gave it daily 'tendance—now and then
Turning the colt upon the sward to graze.
And so with tender care she throve and grew
Into a beauty all except that leg,
On which, tho' seeming strong, she slightly limp'd
Long as she lived. I put her by for brood,
And never work'd her once; and she was tame,
Yet full of spirit—all my horses are—
And this Miss Jude is her great-granddaughter,
And very like her, too; free as the air,
Moving as if she owned the earth and stars:
Look at her form!—And is it not superb—
Is it not poetry—grand, beautiful?"
So the kind farmer, lighting, crack'd his whip,
Whereat Miss Jude shot like a flash of light
In one short circle, lessening thro' her gaits,
Then put her delicate mouth within his palm,
And lightly falling on her knees, remained
In waiting—
"Your horses are good blood," young Adam said,
As Farmer Ray turn'd half around to go—
"Ha, ha, just there you are in error, boy;
More's in the plenty of the farmer's grain,
Than in the goodness of the filly's blood."

J. P. Malone.

Hygiene and Household Economy.

LEARN TO KEEP HOUSE.

No young lady can be too well instructed in anything which will affect the comfort of a family. Whatever position in society she occupies, she needs a practical knowledge of household duties. She may be placed in such circumstances that it will not be necessary for her to perform much domestic labor; but on this account she needs no less knowledge than if she was obliged to preside personally over the cooking-stove and the pantry. Indeed, it is more difficult to direct others, and requires more experience, than to do the same work with our own hands.

Young people cannot realize the importance of a thorough knowledge of housewifery

but those who have suffered the inconvenience and mortification of ignorance can well appreciate it. Children should be early indulged in their disposition to bake and experiment in various ways. It is often but a troublesome help that they afford; still it is of great advantage to them. I know a little girl who at nine years old made a loaf of bread every week during the winter. Her mother taught her how much yeast, salt, and flour to use, and she became quite an expert baker. Some mothers give their daughters the care of housekeeping each a week by turns. It seems to me a good arrangement, and a most useful part of their education.

TO MAKE A PLAIN SAUCE.—Take two cups of sugar, the same of water; let it boil; have ready as many quartered apples as the syrup will cover, let it simmer until the apples become transparent, then remove it from the fire and add a teaspoonful of extract of lemon.

RICE GRIDDLES.—One teacup of cold hominy, one egg, one teacup of sour milk, one teacup of rice flour, one-quarter teaspoonful of soda, a little salt; bake on griddle and serve hot.

THE RURAL CAROLINIAN is clubbed with the following first-class newspapers, at the rates annexed. Remittances in all cases direct to either office:

	Daily	Tri-Weekly	Weekly
Richmond (Va.) Dispatch	6 50	4 00 semi-w.	$3 00
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Macon Telegraph	10 50	5 00 semi-w.	4 00
Columbus Sun	11 00		3 00
Mobile Tribune	11 00		4 00
The Weekly Gleaner, Columbia, S. C.			4 00
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The Scooba Spectator, Scooba, Miss.			4 00
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"Enquirer," Yorkville, S. C.			4 00
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6	Subscriptions	$10 00
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1 column	15	28	40	60	100	back cover, 50 per
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No editorial notice given to advertisements on any consideration. Nothing paid for inserted in reading matter.

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Name and character of business. Page.
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Eason, James M. & Bro...E. Iron Wks...Inside Cover.
Burke, J. W. & Co.....Dickson's Book.....8
Bee, W. C. & Co.....Soluble Manures.....6
Dukes, W. C. & Co.....Wando Fertilizer.....4
Estill, J. H.....Savannah News.....11
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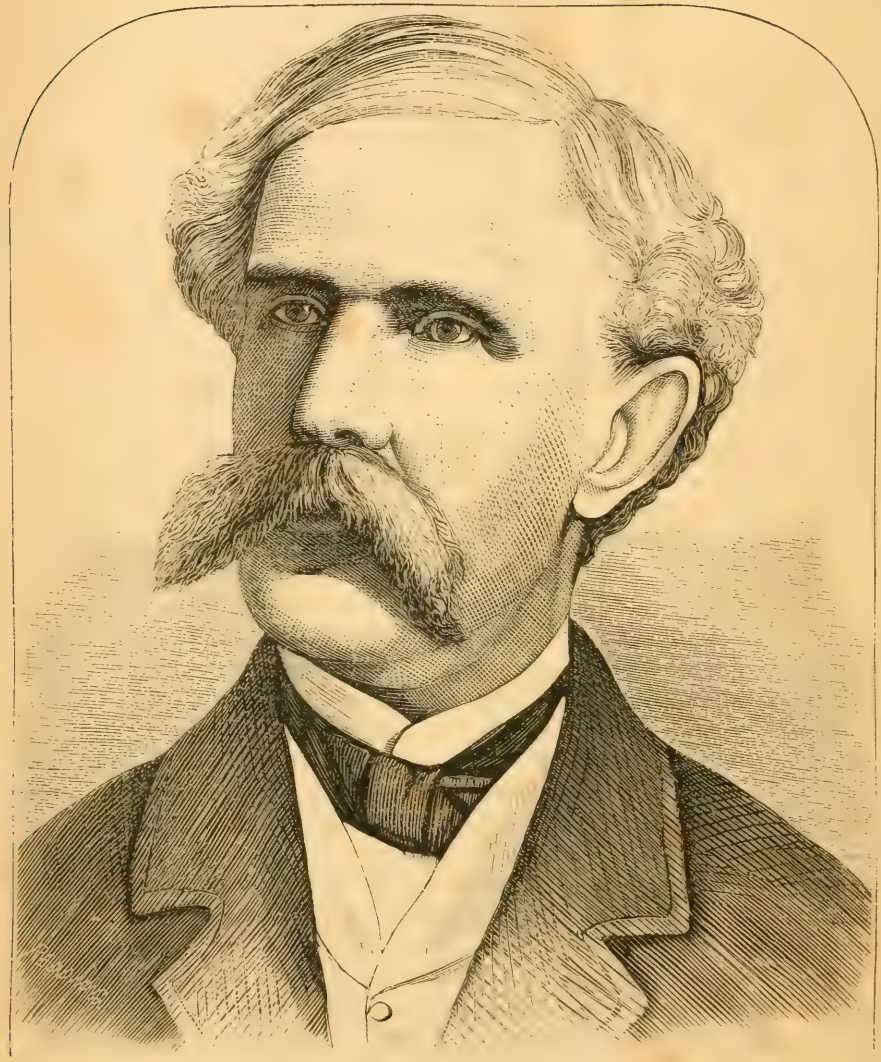


THE

RURAL CAROLINIAN.

Vol. I.] JUNE, 1870. [No. IX.

Hon. Horace Capron, Commissioner of Agriculture.

We occasionally find the right man in the right place, and the present head of the Department of Agriculture at Washington, furnishes a striking instance. Being himself a practical farmer, he knows the needs of the farming community, and sympathizes fully with the agriculturist in all his difficulties. He has the interests of the farmer at heart, and brings all his energy, business talent, skill and experience to bear upon the work to which he is devoted; and in this work he allows no party or sectional views to influence him. We of the South can count upon as hearty a coöperation in reorganizing our industry, reconstructing our agricultural systems, and laying anew the foundations of our prosperity, as they of New England or of the West in their plans for improvement and progress; and we take pleasure in introducing him to our readers by means of a brief sketch of his life and an admirable portrait. We copy the portrait and condense the biography from our enterprising cotemporary, the *Rural New Yorker*.

Horace Capron is the fifth in descent from Banfield Capron, of a Huguenot family, which left France on the revocation of the Edict of Nantes, settling in England. In 1651 he emigrated to America, and settled in Cumberland, Rhode Island, afterward removing to Massachusetts.

Dr. Seth Capron, the father of Commissioner Capron, was an officer of the Revolutionary army, who served under the eye of Washington, and accompanied him across the Hudson on his taking leave of the army. He settled in Oneida County, New York, in 1804, where he practised his profession successfully for many years, and where, in 1809–10, he earned the high distinction of being the originator of the first woollen factory in the United States.

Horace Capron was educated for a cadetship at West Point, but he preferred the activities of production to the splendid inaction of military life in a time of peace. He first essayed a thorough knowledge of cotton manufacturing at the mills at Walden, Orange County, N. Y.; but finding a wider

field for coveted acquisitions in the mills at Matteawan, in Dutchess County, and a generous appreciation in the noble proprietors, Peter H. and Abraham Schenck, he pursued his course of practical education under their direction, devoting his time to mechanical study, draughting patterns, completing estimates and plans of factories, setting up and operating machinery, etc.

In 1834 he married a daughter of Major Nicholas Snowden, of Prince George's County, one of the oldest and most respectable of Maryland families. By this marriage he became interested in the extensive water-power of the Patuxent River, at Laurel, on the Washington Branch of the Baltimore and Ohio Railroad, and soon engaged in the erection of large manufactories of cotton cloths and cotton machinery, building up, from a small beginning, works which, in 1849, the date of their highest prosperity, gave employment and subsistence to a population of 2,300 inhabitants.

But it is as a farmer principally that we wish here to call attention to Mr. Capron's career. While at Laurel, engaged in manufacturing, he became also a farmer; and his success in agriculture was no less decided than in making cotton goods. As a renovater of worn out lands and a breeder of stock, as well as a leader in advanced processes in agriculture, characterized as "high farming," he became distinguished at once.

The "Laurel Farm" consisted of 1,200 acres. Its assessed valuation in 1836 was seven dollars per acre. Its improvement was commenced in 1841, and in 1847 its value was estimated at sixty dollars per acre. Nor was the change effected at great cost. It is true that the expenditures in the improvement were liberal, but the cash returns were equally liberal. In these seven years the disbursements for culture, manure and management, were $34,363 87; the receipts were $36,269 34. Adding to the original cost of the farm, the expense of substantial and spacious buildings and of farm improvements, the improved farm and its aggregate products exceeded the sum by more than $37,000, or $5,500 per annum for seven years—a creditable result, certainly, upon land so barren that ten bushels of oats or five bushels of poor corn per acre, could scarcely be expected, and where not a spear of cultivated grass could be found—a fair return for land similar to that which a neighbor bought for two dollars and four cents per acre, and was bantered with having paid just two dollars per acre too much, and which now, after a similar course of improvement, cannot be bought for eighty dollars.

The means of restoration employed by Mr. Capron were barnyard manures, ashes, lime, bone-dust, guano, and other fertilizers; thorough and ultimately deep plowing; tile draining, and the abundant sowing of large areas in grass seeds. In 1847 the home manures applied amounted to one thousand two-horse loads, and from 1841 to 1847, more than $8,000 was expended in other fertilizers. As a result, the products of 1848 realized more than $14,000, not from corn or wheat or tobacco, but from the milk and flesh and labor of farm animals, fed from a soil productive of little more than broomsedge a few years previously.

It is no wonder that, twenty years ago, in Maryland, an improvement so

unusual as to appear almost magical, should challenge the attention of agriculturists throughout the State. President Taylor was at one time drawn by its attractions from the distracting cares of the White House, to spend several days, as a guest of the proprietor, amid the freshness and beauty of "Laurel Farm." The veteran editor, John S. Skinner, in his *Plow, Loom and Anvil*, said of it about this time: "What ought to be more flattering to that true pride which is not only justifiable, but commendable and auspicious in every cultivator of the soil, than to have the traveller, as he passes, either rein up his horse to admire, or point from the window of the car as it flies along on its iron track, exclaiming: 'Ah! look at that! that looks something like a farm! There are signs of honorable ambition. There you behold industry guided by knowledge. There it is that visible improvement and increased productiveness vindicate the cause of agriculture and assert its claim to be ranked among intellectual professions!' Such are reflections that every thinking man makes—such the observations that every man hears as he passes the *laurel*-crowned oasis, half-way in the great desert which some years since spread over the country between Baltimore and Washington, but which is now giving way slowly but surely to the force of *mind applied to the art of cultivation.*"

In 1854, Mr. Capron emigrated to Illinois and settled upon a tract of wild land, and with his own labor and that of his three sons, he produced another model farm, continued the breeding of Devon cattle, and established a herd and a reputation which became known throughout the West. Many of the most noted prize-takers of this breed, throughout that portion of the Mississippi valley, can be traced to this herd.

During the late civil war, Mr. Capron served with distinction as a colonel in the Federal army, and in 1866 was commissioned brevet brigadier-general as an honorable recognition of faithful services.

General Capron was confirmed as Commissioner of Agriculture November 29, 1867. Of his fitness for that position the results of his administration are the best demonstration. He knows the capabilities and the wants of the North, the South and the West, and appears to realize his opportunity, through the agency of his office, to increase by millions the wealth of the country. Yet his enthusiasm for progress, which has all the warmth of youth, is tempered by the discretion of age and wisdom gained in the school of experience.

His integrity is uncompromising, and his courtesy and urbanity show him an accomplished gentleman, as well as a zealous and capable officer.

Clover.—Clover plowed in has three effects. It gives vegetable mould. The roots bring to the soil plant-food out of the subsoil; and the acid produced, when the decay is going on, aids in dissolving the mineral parts of the soil. In granite lands this last is of as much importance as either of the others.

The Cause and Prevention of Rust in Cotton.

AN ESSAY READ BEFORE THE POMOLOGICAL AND FARMERS' CLUB OF SOCIETY HILL.

While, in this latitude, the cotton plant is comparatively exempt from the ravages of the army and boll worm, it seems peculiarly liable to injury from rust, not due probably to climatic influences. I do not think I over-estimate the loss from this cause during the last season upon many of our farms, when I place it at one-third of the probable yield. With propriety, then, we come to the consideration of this insidious disease, its character, its cause, and, if possible, its remedies.

WHAT IS RUST IN COTTON?

The first point of inquiry is, What is the disease? Is it an external affection of the stalk and leaf, and, if so, is it the presence of animal or vegetable parasites, or is it simply a decay of the structure of the plant from defective or noxious matter in the soil?

Each of these theories has been advanced by respectable authority. Mr. Ruffin ascribes the disease to the presence of minute animalculæ. (See Ruffin's Report.) Professor Harper, of Mississippi, (see "Cotton-Planters' Manual,") says: "The nature of this rust is easily found out by the aid of a sufficiently powerful microscope, and is known to be nothing else but a parasitical fungus, growing upon the stock and branches of the cotton plant." On the other hand, Dr. J. Lawrence Smith, a chemist of distinction, who was employed by the Black Oak Agricultural Society to investigate this subject, says, "that which attacks cotton shows no fungus growth," and expresses the opinion that it is due mainly to noxious substances in the soil, and especially to the peroxide of iron. In this opinion Mr. Henry W. Ravenel, of Aiken, concurs, than whom no higher authority exists in the South. In a recent communication, which I had the pleasure of receiving from him, he says: "I have myself paid some attention to this branch of botany, and at the time made frequent and close examination of the diseased plant, and could never in any instance find any indications of cryptogamic growth. I am satisfied that rust in cotton is not caused by any parasite such as affects wheat, rye, oats and other cereals, but is only a diseased condition of the plant, affecting its structural organization, and probably caused by some deleterious agent in the soil."

Which of these theories shall we accept? In the absence of direct authority, the weight of probability is in favor of the fungus theory, if we are confined to any single one. It is well known that there is a numerous order of cryptogamic plants, affecting almost every variety of vegetation, and there is no reason why the cotton plant should be exempt. But the probability is that the term *rust* has been employed in a vague sense to indicate several diseases of the cotton plant, so that each of these theories may be true to a limited extent. The disease certainly presents itself to us in at least two apparently distinct forms, designated red and black rust.

The exact nature of the disease, however, is an interesting question of science, rather than one of practical value. It will be found, whichever theory we adopt, that in all cases over which the farmer can have any control, the exciting cause is to be found in the soil.

The cognate disease which affects grain, and is known elsewhere under the term "Mildew," has been the subject of close investigation for years, and especially by the intelligent agricultural mind of Great Britain. This is known to be a fungus, which is always more or less present, (see Professor Johnston's article, Farmers' Enclyclopedia, page 809,) but which only becomes destructive under circumstances favorable to its development—generally a feeble or diseased condition of the plant. This is the exact theory with regard to rust in the cotton plant. "This fungus," says Professor Harper, "is produced by a diseased state of the plant, caused by a stagnation in its growth and a consequent relaxation in circulation of the fluid or sap of the plant." And this diseased state of the plant he ascribes more generally to a defective condition of the soil. Whether, then, the disease is external or internal, the depredation of a parasite, or decay from defective circulation, it is to the soil that we are to look for a remedy.

OBSERVED FACTS IN THE CASE.

Having thus stated the theories of the disease, it will be instructive to examine the various facts which have fallen under our observation, both in the appearance of the disease and the remedies which have been employed, to see how far they may accord with one or the other of these theories; how far they may be explained upon recognized principles, and how far they may throw further light upon this obscure subject. The first fact which we observe is that in unpropitious seasons, such as the last, the disease prevails generally, and affects soils of almost every description. Here the exciting cause would seem to be in certain atmospheric conditions, and in conflict with the theory of noxious matter as an exclusive one. Here the disease would seem to be beyond the control of the farmer; but it is not entirely so. On my own farm, during the last season, amid the general prevalence of the disease, a new ground and a premium acre under high treatment, on opposite sides of the farm, were entirely exempt. This fact proves that under the most adverse atmospheric conditions, a high condition of the soil, natural or artificial, will mitigate if not prevent the disease. The second fact which we notice, is that certain soils are extremely liable to the disease, while others, and especially new lands, are generally exempt. Here the exciting cause is evidently in the soil, and the cause is often apparent. Imperfect drainage and excess of vegetable or mineral matter are clearly unhealthy to the growth of plants, and, as might be anticipated, a removal of them will correct the evil. More thorough drainage and the application of lime or ashes has, with the observation of many of us, arrested the tendency to rust in certain lands.

But sometimes the cause is not so evident. Lands will rust cotton in which we can discover no physical or chemical defect. They seem moderately dry, and produce other crops in fair abundance. Here the defect may be from

the presence of noxious matter in the soil, in the form of peroxide of iron, as has been often suggested, or it may arise from excessive moisture below the surface. Often soils which seem dry upon the surface, and where the immediate subsoil is open and porous, are yet underlaid, at a short distance below by an impervious subsoil, which positively forbids the passage of water. This is generally indicated by the presence of craw fish, and always by a boggy condition after a moderate fall of rain. This condition cannot be otherwise than cold and unhealthy. The remedy, in the first case, as we are taught by agricultural chemistry, is in exposing the soil to atmospheric action, and in the other, underdrainage is the only effective remedy. But as this is not generally practicable, the best course is to give up such lands to more hardy crops.

There is one class of lands extremely liable to rust, the cause of which is difficult to understand. The isinglass lands upon our rivers are among our dryest and most fertile soils. In the production of corn they stand unrivalled, and yet they almost invariably produce rust in cotton. When new, they are said not to rust, and it may be that their very generous nature has led to exhaustion in some essential element. It would be difficult to estimate the amount of potash, phosphoric acid, lime, etc., which these generous soils have, year after year, yielded to the tillage of the farmer. This view is sustained by the fact that high manuring has been found an effective remedy.

THE CRITICAL PERIOD.

A third fact is that cotton usually rusts at about the same period of its growth—about the period of fruiting. I have never known a young plant to be affected by the disease. It is at the time of fruiting that the demands upon the soil are largest. The ash of the cotton seed amounts to four per cent. of weight, and is one of the richest of all vegetable substances in inorganic matter. It might be expected, then, that any defect of the soil would be exhibited at this critical period, and the vigor and strength of the plant being impaired, it would fall an easy victim to disease. It is a well attested fact that manuring, at this time, has often checked the development of rust. Again, it has been observed that cotton manured with guano has taken rust, while that unmanured and adjacent has escaped. This fact is not singular when we reflect that the effect of guano, especially in small quantities, is soon exhausted, and the plant is then left upon very poor soils in worse condition than if no manure had been used.

Again, it is said that the prolific varieties, which are now known under the general term of Dickson seed, were found more liable to rust than the ordinary varieties. The principle upon which this depends will not be difficult to discover when we examine into the exact function which the plant performs in producing fruit.

Alone the plant can produce nothing. It can only work up into living forms the dead elements of the soil, and, if these elements are wanting, the very tendency to fruitfulness is itself a source of failure.

In the report of a commission appointed by the Government of Australia,

to investigate the cause of mildew in wheat, it is stated as supported by facts that the more improved and productive varieties were peculiarly subject to the disease. This truth is sustained by analogies from animal life. Improved stock, require improved pasturage; and improved and prolific plants, require a higher condition of the soil.

THE REMEDIES INDICATED.

The limits of our essay will not allow a further statement of facts. From what has been said, I think we may conclude that whatever may be the exact nature of the disease, its exciting cause varies with the varied condition of soil and season. It may be affirmed that whatever is unhealthy to the plant, will generally cause it to develop rust. A general remedy is alone to be found in judicious manuring and cultivation. A special cause will often require the application of a special remedy.

There is a disposition among the purely practical farmers of the country to ascribe the disease to some general cause, such, for example, as the presence of the pokeweed, and to seek for a remedy applicable to all cases. In this view common salt is sometimes recommended as a panacea. The value of salt, both as a manure and as a remedy for mildew in grain, constitutes one of the most vexed questions in the literature of English agriculture, and its value in this country seems equally uncertain. Some remarkable facts have been stated to me by several of our best farmers, attesting its value as a preventive of rust. But it is difficult to account for its action in this respect. Its base constitutes one of the least important elements which enter into plants, and its value as a septic agent must be inferior to both lime and ashes. Its effect in destroying insect-life is well known, and in England it has been found equally destructive to fungus growth. It is to this that Professor Johnston ascribes its value both as a preventive and a remedy for mildew. Whether it acts in this way upon the disease in our cotton plant, would depend upon whether it were of the same character. I propose during the present season to make some careful experiments to test the value of salt as a preventive of rust.

EDWARD E. EVANS.

Industrial Schools.

The practical utilitarian spirit of our age is nowise manifested more clearly than in the great and growing importance of agriculture, which, ever acknowledged to be the most useful of arts, has at length been admitted to a place among the sciences and liberal pursuits of mankind. Numerous industrial institutions have been established for giving instruction in agriculture and the mechanic arts, and if the success of such establishments has not always satisfied the expectations of their founders, there is still a basis of such evident practical wisdom in the efforts thus made, and such have been frequently the gratifying results, that private charity has been endorsed by public bene-

ficence. There is hardly a country in Europe which has not founded agricultural colleges, professorships or schools with farms attached; there is hardly a Northern State of the Union which is not following in the same track, and the Federal Government has appropriated liberally of the public domain to this object. The amount falling to the share of South Carolina is 180,000 acres.

To devise some simple and practical plan for the education of our children is what we are all anxious to do. The State Agricultural Society has taken this matter in hand, and we may confidently expect, at the next session of this important body, that some definite scheme will be adopted and put into operation, by which the children of the poor shall receive at least a rudimentary education in letters. The principle appears to be just and simple, that boys and youths, by moderate, well-directed labor during a part of the day or of the week, may wholly or in part defray the expenses of food, clothing and such tuition as may render them soon able, not only to take care of themselves, but to add to the riches and power of the Commonwealth. A central farm-school, successfully established, would be the model for organizing such institutions in every county of the State. Wisely managed, and not aiming at first to accomplish too much, there could be no doubt of success.

Nearly twenty years ago, the *British Farmer*, in describing the Glasnevin Farm-School, near Dublin, in Ireland, declared that, upon that little farm of fifty-one acres, tilled by the hands of agricultural students alone, there was "*more manure made, larger crops grown, more people and stock fed, and more money made, than upon any spot of the same size in any part of the known world.*" But since that time no branches of knowledge have made such strides as the sciences and arts which, like handmaidens, do obeisance to Agriculture, the mother and queen of all. For ages coal lay useless; but in the fulness of time, when wanted, it was at hand. So with guano and our phosphates. By the discovery of coal our mechanism has reached such perfection that we can grind one hundred times more grain than the two women who sat by the mill in the days of Homer; but how far behind our mechanism is our agriculture. The limit of production to any plant cannot be calculated. A farmer near Columbia, (Dr. Parker,) has raised more than 200 bushels of corn on an acre; wheat at the rate of 165 bushels has been grown in England. Professor Ville, by late experiments with his complete manure, has increased the yield of wheat from 198 lbs. of grain to 2,464 lbs. At the same ratio, land producing eight bushels corn would yield 100, and soil growing 500 lbs. of seed cotton would produce four bales per acre.

To each section of our State belongs a peculiar geological formation, abounding perhaps in some, deficient in others, of the four great constituents necessary, viz.: nitrogenous matter, phosphate of lime, potash and lime. There is no need of crucible and retort; the plant is the best analyzer of soils, and every farmer should be taught the composition of manure and the process of analysis. A model farm-school in each county, by frequent and accurate experiments would ascertain the especial wants of the soil in the

neighborhood, and thus instruct in what way a complete manure for corn and cotton might be there manufactured at the cheapest rate.

To teach youths, for their labor, the necessary rudiments of English education, such as reading, writing, ciphering, book-keeping,—the manufacture and use of farming tools,—the raising and management of all kinds of stock,—building, ditching, fencing, hedging,—the measuring of land,—the manufacture, mixing and testing of manures,—the cultivation of crops,—the preparation and shipping of them to market,—their sale,—the use of money,—to teach youths these practical lessons, while preserving them in health and vigor of body while training them to habits of order, self-control, industry, frugality is the best way, not only to put money in the purse, but to build up the State, and to bind in solid links a great and honorable past to a grand and noble future.

WM. PINKNEY STARKE.

Colleton Agricultural and Mechanical Society.

Col. D. Wyatt Aiken, *Secretary Agricultural and Mechanical Society, S. C.:*

Sir: I am directed, by a resolution adopted at a late meeting of the Colleton Agricultural and Mechanical Society, to lay before you, for official information, a brief statement of the organization of the said Society, together with a short view of its constitutional plan, its works, results and prospects; and, also, the names of its officers.

To be succinct, I shall pursue the above order, and first state that the Society was organized on the 10th day of September. A. D. 1869, with a membership of about sixty-five persons; the number since having slowly increased till at present it is nearly a hundred. In our constitutional restrictions respecting membership we were fortunate enough to follow exactly in the footsteps of the State Society, to which we designed to become subordinate, though not having a copy of its constitution, we could not conform to its rules as perfectly as we desired—our more radical deviations will appear when I come to state more fully our constitutional plan.

The officers consist of one President and four Vice-Presidents, (each of whom is respectively chairman of one of the four standing committees,) one Treasurer, and one Corresponding and one Recording Secretary. There is then an Executive Cabinet, (corresponding to your Council,) composed of the aforesaid officers, and six members, elected annually with them from the body of the Society, designated "Cabinetmen," with whom the supreme direction and control of the Society rests. The four Standing Committees are respectively upon Fertilizers and Culture, Stock Raising and Improvement, Mechanical Improvements and Inventions, and Immigration and Labor—and great good is being done in the work accomplished by these. For instance, the Committee on Fertilizers are experimenting in various commercial manures, and will recommend such as are found good; and the others are doing equally effective and important work in their departments.

The work of the fourth or last committee is far the most important of any, and yet it is not and cannot, in the present condition of things, be pushed forward with a rapidity equal to its importance. Viewed as a political question, our people are singularly blind to its paramount interests, and it is owing solely to their failure to appreciate it, that all immigration schemes have heretofore failed. At the very root of all these a fatal error has always lurked; for they have always looked forward to the introduction merely of labor, whereas in our country we want an augmentation of moral and political as well as physical force. And it is here that the enemies to the rebuilding of the South have industriously plied their most plausible and most insidious argument, and caused the impression to be wrought upon the laboring populations of Europe, that we desired to put them in the condition and stead of our former slaves. Of course, that is precisely their condition where they are; but they are led to believe it is worse here, and, consequently, until we offer fairer and more liberal inducements, we shall never get them among us.

Our great road to redemption lies through industry, and industrial improvements here can only be promoted by a dense population. Only in this way can a society or social reform be built up or inaugurated in our midst. No arguments spoken or written can ever have the least effect among a people who will neither listen nor read—and of such is Colleton generally. These things, then, can only be effected through the success of practical tests, and the gentle fusion of foreign industry, liberality and intelligence. And for this work time is required; for though the rooting out of prejudice may be accelerated, it cannot be entirely accomplished by argument.

What then is to be done? We shall call for contributions of land; say, let every man who has a thousand acres, give five hundred, and in that ratio to be given to immigrants, in fee-simple, in fifty or a hundred acre tracts. This, though an agrarian policy, will add twenty, perhaps fifty or a hundred fold to the intrinsic value of the moiety retained, and it will only anticipate the odious but inevitable agrarianism which it is the aim of the dominant party by oppressive taxation to bring about. How much wiser then to take time by the forelock, and build up society, enhance the value of our lands, and prevent the evil results that will follow a further neglect of these interests. No doubt, if the people who have more land than they can well work, could look at these facts in their true light, they would readily join in a policy which promises so much; but how are we to get their ear?

The Society has met several times since its organization, and is slowly gaining ground, so that we are moderately encouraged to hope that we may after awhile begin to hold annual fairs. Its stated meetings are quarterly.

I have the honor to be your obedient servant,

P. J. MALONE,
Corresponding Secretary.

Walterboro', S. C., April 12, 1870.

Education for the Agriculturist.

The time has come for us to think. That great God, which has given to man all his blessings, has commanded him to till the ground. Hence he has made the tilling of the earth the foundation of all civilization. Look abroad upon man from the creation, and everywhere he is a savage—a roaming barbarian, till he sits down to make his bread by the sweat of his face. High and low are dependent on it for bread—high and low are alike affected by its prosperity or decline. It is, therefore, the most important of all the labors of man, and the one for which he most needs education.

Education should be considered in a four-fold relation: 1. That which directs our attention to God and immortality. 2. That which teaches us our duties to our fellow-men. 3. That which enlarges and gives control of our mental faculties; and 4. That which prepares us for a particular avocation.

1. The first class, that which directs our attention to God and immortality, should begin in the nursery, and be continued, and be a part of all future instruction to manhood.

2. That which teaches our duties to our fellow-men, should also be early and forcibly impressed, from youth to manhood. With reverence and filial fear towards God, the moral faculties are, comparatively, easy of development. Then man is fortified with pure and noble principles that, in the hour of fierce temptation and trial, he will be covered in an armor for protection. Inspire him with the love of the beautiful—set before his view a pattern of refined manners; let him see what is excellent in painting, music and poetry; call his attention to birds and insects, then to his own organism, to see with what admirable aptitude the internal constitutions of nature's works are to their external circumstances. Let him see what is sublime in nature; present him with examples of moral grandeur, and kindle within him aspirations of glory, honor and immortality—then you will have a man bent to do justice and love mercy.

3. That which gives control and strengthens the mental faculties, should have a large scope. Embracing first and prominent, mathematics, chemistry, astronomy and philosophy, to cultivate the faculty of reason; and the classics, to cultivate the faculty of language.

4. Under this head all the sciences are embraced, in addition to the first three classes. But most prominent such as are allied to, and necessary for, success in the avocation he may choose for himself. With a full understanding of all these heads, the man is then independent of the outer world, except for his bread, let him take to whatever pursuit he may.

A knowledge of the first three of these classes prepares a man to be a lawyer, doctor or divine. But it requires the fourth to make a successful general, statesman, farmer or planter. A full education has many and great advantages, and, most important of all, it cannot be taken away from him. It makes him active, enterprising, circumspect, far-sighted, and prepared for

any emergency. Above these it secures to him the regard of the wise and good, and he learns to respect himself. To him men look for counsel. Of him his country claims deliverance in times of danger and distress. He is the pilot to steer the ship of State into a safe harbor.

Still, learning the sciences without the proper moral training, will neither make a safe leader nor a happy and prosperous people. To do both, the young must be inspired with reverence for their parents and old age; with proper deference for the opinion of the wise and good of all ages, and with that graceful diffidence in their own sagacity and power, which leads them to have due respect for the records of wisdom of the past; that honest candor and earnestness in contemplating all things which strives to hunt truth—and a total absence of arrogant forwardness and self-sufficiency, which considers everything silly or useless that does not agree with their own views or does not conform to custom. With a full education, the man of energy can turn himself to any of the pursuits of life with confidence of success.

But what in this country and age will be considered strange, though yet strictly true, it requires a more extensive, scientific knowledge to make a successful farmer or planter than for any other pursuit of man. Yet, some tillers of the ground of more than ordinary capacity, and of good judgment, closely watching his own and the experience of others, have gone so far ahead of the generality of tillers, as to be by them considered successful. But to draw from the earth, air and water their complete and united power of production, demands in the operator the capacity of a general, to discipline and command his laborers; of a merchant, to keep accounts of all things connected with his farm, his experiments, sales and purchases; of the political economist, to know how to prepare, when and where to send his products to the most advantageous markets, and what products to raise to suit his soil and climate, by which to secure the greatest profit; of the chemist, to analyze the soil, the plants, and the manure he uses; the historian of both ancient and modern nations, and especially the political condition of the nations around him; and of the mathematician most of all, for strengthening the mind so as to grasp and master all other knowledge. He should understand all about mechanism and its laws, to see that all his tools and implements are not only in order, but properly adapted to the purpose intended, and how best to adapt the draught to the animal. He should understand hygiene, to manage the diseases of man and beast. He should be able to distinguish between the birds and insects that are beneficial and those that are injurious to his crops, and how to protect the one and destroy the other. He ought to know all about vegetable physiology; the effects of light, heat, water, electricity and the air upon vegetation. There are also the sciences of botany, mineralogy and hydraulics equally, if not more, essential to ensure the maximum of success. When thus prepared, it may suit his fancy to study divinity, law or medicine, for either of which he is doubly armed. And he is eminently prepared to be a statesman to guide the helm of State, or a general to lead armies, or a farmer to draw from the earth, air and water the maximum of the blessings

our kind Father has there fixed for the use of man. But let it not be supposed that education, however extensive in science, without that training which inculcates reverence for God and good will towards their fellows, will make men fit to give counsels. On the contrary, uninfluenced by the counsels of moral rectitude, the higher the instruction, the better able is he to do injury to his fellows. For he is then qualified to make a scientific counterfeiter or gambler, a scientific pick-lock or pick-pocket, and may raise himself to the unenviable reputation of a vulture fattening on the property and character of his species. R. F. SIMPSON.

Pendleton, S. C.

Clover and Fruits in Louisiana.

Colonel D. Wyatt Aiken :

DEAR SIR: Enclosed you will find a sprig of clover, the variety of which is new to me. The bloom is a bright yellow, quite small. The seed-pods are beautifully coiled up, as you will find upon examination of the specimen enclosed. It is several weeks later than the white in putting forth its bloom, or we would have noticed it in our rambles, on your visit to us five weeks ago. You may remember my calling your attention to the beautiful growth of clover and lucerne on our lawns and levees. Since your visit, I have had a good heavy crop of hay mowed from my lawn. From appearances, I shall have a second mowing in the course of two weeks. This new variety of yellow clover is known to be a new-comer in this parish. It is very much disposed to choke out the white, being of much more dense growth. Where I have measured the white, standing eighteen inches high, I find the yellow, (when stretched up,) measures three feet. I understand this clover is known in Mississippi as "the Jeff. Davis Clover." President Davis introduced it into his native State several years before the war. It is evidently travelling down the banks of this mighty river. I had occasion to ride thirty miles down the coast, a few days ago. I observed very little below Point Celest.

In riding through the cane-fields, I noticed a fine luxuriant growth of timothy. I called the attention of an old planter of this State to the fact. He remarked that it is indigenous. This wild clover and timothy are just now in condition (22d April) for the mower.

You must have noticed the thousands of acres of land now idle for want of labor. Would it not pay to put some of it in condition for the successful cultivation of a hay crop? I think so. Thousands of bales are consumed in and about New Orleans, sent us by our Northern brethern. If they can make hay pay, why cannot we, with our superior soil and climate and the greatest possible facility for irrigation?

We have been luxuriating in the abundance of the Japan Plum. They have been ripe six or seven weeks now, and will continue several weeks yet. When in perfection, they are about the size and shape of a guinea egg. The

fruit, when ripe, is of a bright yellow, and delicious to the taste. The cultivation of this fruit was introduced into this State about thirty years ago, and it is said the fruit has very much improved since its introduction. I understand the trees will not produce fruit many degrees north of New Orleans.

We have the promise of a full crop of oranges. Many of our neighbors are expecting to realize $800 and $1,000 per acre for the crop. The merchant comes around in May and June and bargains for the crop, paying one-half in advance, and the balance when the crop is ripe, the merchant taking all risks of storms, theft or other casualties. These orange-groves are exceedingly beautiful, and very remunerative.

This is truly a most interesting country to the agriculturist. We can form no idea yet of the agricultural resources of Lower Louisiana They appear to me almost unlimited. In the "good old times" sugar monopolized all the attention of the wealth and enterprise of this section. Times are changed; but the planter cannot yet be induced to think that any other production can be made to take the place of the cane. If the Chinaman cannot be made to work these large sugar estates, they cannot be kept up. Negro labor is scarce, unreliable, and cannot be made to pay much longer.

The weather has been too cool and dry for our crops, which are consequently backward. PLAQUEMINE.

Deep Manuring versus Shallow Manuring.

As some points connected with the use of fertilizers appear to be unsettled, perhaps the conclusion I have reached may be of some service to those who may be undecided as to the most profitable method of application.

1st. As to surface application. It is only warranted when you *cannot* get the manure covered. The arguments against it are, that heavy rains will carry off more or less under the most favorable circumstances; in dry seasons it injures the crop; if volatile, the evaporation will be a serious loss. The solubility of all fertilizers being gradually developed, a very small portion will be leached into the soil. Should the manure, however, be *very* soluble, a rain would leach more into the soil, if slow, but a heavy shower would carry it off dissolved.

2d. As to shallow applications. The objections to this method are the same that belong to the surface, but in a lesser degree. Its advantages have been ably set forth in your columns. So I will consider the last method, viz.: The deep, and I may be allowed to say, the true method of applying fertilizers (soluble) on any soil.

Among its advantages, we may enumerate all that belong to the surface and shallow, with their disadvantages only in a slight degree. To illustrate this point, I will note the facts connected with a fall of rain covering the surface, one inch deep, in two hours. A variable quantity of this water will be absorbed by the soil. If freshly plowed, one-third may be retained; if

previously saturated, one-fourth would be too high an estimate. Of the quantity absorbed by the soil, a portion escapes by leaching through, and the remainder by evaporation. Let us see now what proportion escapes by leaching. There may be some soils loose and porous, through which water can pass freely. The ashes in a hopper is an example. But even there the ashes must be saturated before the dripping begins, and the process stops and leaves a certain quantity of water incorporated with the ashes, and which will only be driven out by evaporation. It seems to be the case, then, that of the water in the soil a very small quantity leaches through, and the greater part escapes by evaporation, from the fact that our fields are not hoppers, and water will not enter the soil after saturation, but runs off.

Now, it is easy to understand, that by the process of surface evaporation, all the soluble ingredients in the soil will be brought *to the surface.* A breeze and a hot sun in connection will rob the earth of moisture an inch in depth. Let both cease, and in a few hours the dampness will be renewed from the soil beneath, bringing up anything dissolved in it. A circulation sets up from the soil below to the surface above, thence to the air and back in rain or dew to the earth. Thus it is that the evaporating process will bring all soluble ingredients gradually, slowly, but surely to the surface, probably in proportion to the requirements of the plant. A beautiful law of nature, which almost prevents the leaching of water through soils, and compels it to pass off by surface evaporation, thereby bringing up from the depths and leaving in reach of the roots all those substances which are necessary to the plant's life and the perfection of its fruits. So, I say, put your fertilizer deep, in nature's storehouse, and she will feed your crops to maturity; but should your wisdom determine otherwise, you will undoubtedly run the risk of losing as much as fifty per cent. of your application.

In connection with this, let me beg you, Mr. Editor, and your contributors, to protest loud and long against the practice of exposing fertilizers to the rains on the cars and depots. The hauling is heavy enough without the additional water, not to speak of the loss, and I am sure the railroad companies will appreciate the idea, and give us the article dry and in a condition proper and necessary, not only for estimating merits, but for application to crops. Will some capable man guess at the loss to purchasers of fertilizers by the late heavy rains?

J. W. THOMAS.

Abbeville, S. C.

Irrigation in Eastern Spain.

Mr. S. S. Cox, in his "Search after Sunbeams," speaks thus about the elements of wealth in Eastern Spain:

"Having now seen, under my own eyes, the principal irrigation works of Spain, I feel more competent to write about it. In Valencia, from the rivers Turia and Jucar, there are fifty-six thousand eight hundred and ten acres under irrigation; in Murcia, from the Segura, twenty-five thousand nine hundren and fifteen; at Oribuela, from the Segura, fifty thousand three hundred

and eighteen; at Elche, forty thousand and ten; Alicante, nine thousand one hundred and thirty-nine; at Grenada, from the Darro and Genil, forty-six thousand nine hundred and thirty acres. These works, whose results at least I have witnessed, comprise nearly one-half of the irrigation area of Spain. The total quantity of irrigated land is three hundred and seventy-four thousand two hundred and sixty-nine acres. The best works are those of Valencia, Murcia and Grenada. They are the oldest, being made by the Moors about the year A. D. 800. On the Spanish conquest and division of land, the rules of the Saracenes, about water, were reëstablished. Some of those works are made of masonry, in which rain is collected as at Alicante. Almost anything, and in any quantity of vegetable beauty and utility, can be raised in Spain with this water-power—peppers and peaches, apricots and apples, olives and oranges, sugar and citron, corn and cotton, pears and potatoes; and never less than too crops a year, and sometimes four! Of course, irrigation enhances the value of the land. In Castellon, good irrigated land is worth seven hundred dollars per acre; dry ground only fifty dollars. In Murcia, three thousand dollars per acre are given for the good ground there irrigated. In Valencia, it averages from one thousand to two thousand dollars per acre. Irrigation adds twelve hundred per cent. to the land. The water is an article of lease, trade, sale, auction, for it is as indispensable as the land. In Murcia the sky is always clear and beautiful, and for eight months in the year there is not a drop of rain."

What lessons such examples teach? What untold wealth South Carolina possesses in her water-courses unappropriated, unheeded, and in the face of which her population are daily leaving the home of their fathers? The condition of South Carolina would be surprising if the causes were not, unfortunately, but too apparent. C.

Pendleton, April 13th, 1870.

A Great Cotton Plantation.

A letter from Tahiti to the San Francisco *Bulletin* describes the Plantation Soares, which was established by a company in the year 1863, and is perhaps the most beautiful place in the Pacific It is situated at the base of a high mountain, is three miles long, and varies from a quarter of a mile to a mile in width. There are three roads running the full length of the plantation, and four cross-roads, which are uniformly planted on either side with banana trees, forty feet high, all forming a delightful shade from the sun, making eighteen miles of beautiful carriage drive. The stores, machine-shop and dwellings cover an area of twenty-two acres. There is storeroom for at least two or perhaps three years' cotton, (it is said in case of war.) There are dwellings for 100 families, a good hotel, and buildings for 2,000 laborers. The manager's mansion is the largest and best on the island, and he has besides a fine cottage in the mountain side for use in the hot season. It required the labor of 1,100 men for four months to build the road to this mountain retreat. The land was purchased from the natives for $8,000, and there are about 1,400 acres under cultivation, producing about 400,000 pounds of cleaned cotton annually.

Improvement of Grain by Natural Selection.

At the Exeter meeting of the British Association, Mr. Hallett, of Brighton, read a paper giving an account of his experiments upon the improvement of grain by applying the principles of "natural selection." By this method he succeeded in obtaining a grain of wheat, which, when sown, produced a whole multitude of stalks, each of which bore a magnificent ear well filled with grain. The quality is maintained by the descendant seeds, and the produce is thus increased more than a hundred fold.

Mr. Hallett lays down the following principles as the result of his observations:

1. Every fully-developed plant, whether of wheat, oats or barley, has an ear superior in productive power to any of the rest on that plant.
2. Every such plant contains one grain which proves more productive than any other.
3. The best grain in any plant is found in its best ear.
4. The superior vigor of this grain is transmissible in different degrees to its progeny.
5. By repeated careful selection the superiority is accumulated.
6. The improvement, after a long series of years, reaches a limit.
7. By still continuing to select, the improvement is maintained, and practically a fixed type is the result.

What the Farmer Must Know.

The farmer, like the business man, must know what he is doing; he must have some pretty decided ideas of what he is to accomplish—in fact he must calculate it beforehand.

He must know his soil—that of each lot; not only the top, but of the subsoil.

He must also know what grain and grasses are adapted to each.

He must know when is the best time to work them, whether they need summer fallowing.

He must know the condition in which ground must be when plowed, so that it be not too wet or too dry.

He must know that some grains require earlier sowing than others, and what those grains are.

He must know how to put them in.

He must know that it pays to have machinery to aid him, as well as muscle.

He must know about stocks and manures, and the cultivation of trees and small fruits, and many other things; in a word, he must know what experienced, observing farmers know, to be sure of success. Then he will not guess—will not run such risks.

Department of Horticulture and Rural Art.

My Pear Experience.

Duchesse d' Angouleme.

My pear orchard is on an elevated ridge of grey land, with a red clay subsoil, a light soil but rather cold. It is a reclaimed old field, which about A. D. 1800, was covered by a forest of red, Spanish and white oak, dogwood and

hickory. When I took possession of it, there were remains of an old orchard—the stumps of old apple and peach trees. One day, while riding about the farm, I found a seedling pear on the creek, and had it dug up and planted. There was an old pear tree—a sort of heirloom in the family, (about which a very curious history has been handed down,)—from which I cut a few slips and grafted on this wild stock. The tree grew vigorously, bore in a few years, and continues to bear heavy crops. It is the Bon Chrétien, and formed the nucleus of my pear orchard.

I afterwards got from a nurseryman a select collection—Bartlett, White Doyenné, Ananas De Eté, Duchesse d' Angouleme, Dundas, Brandywine, Van Mons Leon Le Clerc, Seckel, Passe Colmar, * Doyenné Goubalt, Liberale, Upper Crust, Zoar Beauty, Dix, Winter Nelis, * Delices de Jodoigne, Green Chisel, Dearborn's Seedling, * Louise Bonne de Jersey, * Beurré D'Aremberg, Bezi de la Motte, * Peach Pear, * Laurens, * Rostiezer, * Bloodgood, * Julienne, Petit Muscat, Doyenné Renault, * Urbaniste, Eyewood, Belle Lucrative, Vicar of Winkfield, Dr. Bachman, and several others.

Those marked with an asterisk were worked on the quince stock. I never had much fancy for dwarfs of any kind, and these were sent by the nurseryman to convince me that I had unwarrantable prejudices. My experience, however, has proven that my prejudices were not ill founded. The dwarf trees grew finely, (the most of them,) but bore no fruit. The Urbaniste has never borne a pear; a dwarf Seckel has borne only a few; the Doyenné Goubalt never half a dozen; Laurens, nothing; the Bloodgood and Rostiezer have done very well. The four last were removed, after some years trial in the orchard, to the garden. Before their removal they had not borne a pear. The Peach Pear died of blight, the Beurré D'Aremberg of borer, and the rest declined or died.

It is often said that the pear is not liable to be attacked by the borer. This has not been my experience. He has been very persistent in his work upon mine. The blight, however, has been my greatest drawback. When it attacked the limbs I cut back freely, and sometimes saved the tree, or rather prolonged its life; but when it has attacked the trunk, the whole tree, as it were, died at once. I have had several die full of fruit, and in apparently luxuriant health. The Eyewood, Peach Pear, Louise Bonne de Jersey, Green Chisel and Delices de Jodoigne all died in this way.

The Bartlett, Duchesse d' Angouleme and White Doyenné have all suffered from blight, but still bear freely. I have two Bartletts within twenty feet of each other; one has been cut to pieces—the other has never suffered from blight and bears abundantly.

Let me now run over the results of my experience. Bartlett, White Doyenné, Duchesse, No. 1, but subject to blight; Dearborn's Seedling, a delicious early pear, comes into bearing soon, has done well; Belle Lucrative has borne well but has suffered from the borer; Ananas De Eté, dead; summer Bon Chrétien bears well; Dundas, fine large trees, but shy bearers; Brandywine ripens in July, a delicious pear and, so far, healthy, and a sure

bearer; Van Mons Leon Le Clerc, dead; Doyenné Renault, a good pear, suffered from borer; Petit Muscat, very little account, dead blight; Seckel has proved a very shy bearer, the trees are vigorous; Passe Colmar, a delicious fruit, slow to bear, but abundant when it began; Liberale, a very large, luxuriant tree, bears shy, and fruit almost identical with Bon Christien, inclined to rot about the core before it ripens; Upper Crust, a seedling of Wm. Summer, Pomaria, ripens in June, a delicious pear, tree bears early and is very sound and fruitful; Zoar Beauty, fruit has always rotted; Julienne, dead; Dix, a good pear, a slow tree to come into bearing and a shy bearer; Winter Nelis I have found slow to bear, and cannot speak from experience; Louise Bonne de Jersey is a delicious pear, but has borne irregularly; Beurré D'Aremberg is a feeble tree, and I cannot say much for the fruit; Bezi de la Motte seems to be a healthy, vigorous tree, but has not borne much fruit—the beauty of the fruit has been so attractive that it has not been allowed to ripen; the Dr. Bachman, another seedling of Mr. Wm. Summer, of Pomaria, S. C., is a delicious pear, and worthy of cultivation.

In conclusion, my impression is that the soil for the pear should not be made two rich; secondly, that after the trees begin to bear the orchard should not be cultivated on account of the throwing up of suckers, but sown in clover and pastured by hogs and poultry; thirdly, that we should pay more attention to the propagation of seedlings "to the manor born;" fourthly, beware of the introduction into your orchard of trees liable to blight, or of weakly constitution; fifthly, apply ashes freely about the roots, and whitewash your trees every spring with a thick wash of lime and salt; sixthly, watch every symptom of blight or decay, and use the knife freely and immediately. G.

Shortcomings in Fruit-Culture.

Firstly, to dig a hole four feet wide and two feet deep, and waste enough manure in the bottom of it to feed a tree several years.

Fail to underdrain land treated in such a manner, if there be a clay subsoil, and leave each one of your deep holes to act as a cistern for stagnant water immediately under the tree.

After wasting all that manure in the bottom of your hole, starve your tree the balance of its days, ignoring the fact that trees respond as kindly to manure as do cotton or corn, provided you apply the proper kind.

Leave the young trees to struggle with grass and weeds until they are stunted and partially dead.

Then, by way of cultivation, sow down your orchard in small grain, although it has been published a thousand times that small grain should never be planted in an orchard.

When you wish information, instead of consulting one of the many standard works on the subject, and talking with some intelligent neighbor who has successfully raised *good* fruit, get directions from some old ignoramus who grows seedling peaches and grafts apples on sprouts.

Buy your trees from an unknown pedler, instead of from a reliable nurseryman, and be disappointed at the little knotty apples that reward your economy.

Buy winter apples from a reliable Northern nurseryman, and when they ripen six weeks too soon, conclude that this is not an apple country.

Trim off every limb about five feet above the ground, to let the evening sun scald the body of your tree, and that a good wind storm may blow them down by wholesale, if they have survived such treatment long enough to get a good head.

Plant your orchard where it cannot be fenced off, that you may avail yourself of the assistance of hogs in destroying unborn millions of curculios, *et id omne genus.*

Never trouble to take the borers out of trees; or to prevent their being deposited, by the use of coal-tar; and see how long your trees will live.

Adopt no system at all in the training of your grapevines, from fear of adopting the wrong one.

Treat the "black rot" with remedies prescribed for "mildew," and "mildew" with remedies good for the "black rot."

Follow the instruction of Northern fruit-growers, without any modification, for a very different climate and perhaps soil.

Believe everything you see in print about the facility with which fruit may be produced, especially about growing it on old, worn-out, gullied hillsides.

SNARL.

Shading the Ground--Mulching.

The stems, leaves and fruit of plants require light. Deprived of this, they either perish at once or become pale, weak and sickly, and are unable to perform their proper functions. Roots, on the contrary, must have darkness. If you remove the earth from a portion of a growing root, the action of the light will either kill it or so change its nature that it will become essentially a stem. Roots in general like to ramble and feed near the surface, but they never, except when they have another office than their primary one to perform—that of supports or braces for instance—are found naturally growing above the soil.

Where the ground is covered with a thick layer of leaves, as in the forest, the roots of plants are found nearer the surface than where the ground is bare, and, other conditions being equal, the growth more luxuriant. The lesson we may draw from this fact is that, in farming and gardening, benefit may often be derived by producing, artificially, conditions similar to those which are natural in the forest—that is, by covering the ground with a stratum of straw, leaves or other refuse vegetable matter. This is called *mulching*, and we most sincerely believe that, after deep breaking up of the soil and heavy manuring, there is no one thing that will add so largely to the production of our gardens as this almost universally neglected operation—an

operation which our hot, dry seasons render far more important than in cooler and moister climates.

Mulching benefits plants in several ways. In the first place, as already indicated, it obstructs the sun's rays and enables the plant roots to come near the surface of the ground without exposing themselves to the light, from which they instinctively shrink. Secondly, it prevents the rapid evaporation which otherwise would take place, and keeps the soil longer moist. Thirdly, it promotes an equable temperature, preventing injury by extremes of heat and cold. And, fourthly, it prevents the beating rains and parching sunshine from forming a hard crust upon the surface of the ground around the plants.

We do not hold up mulching as a remedy for all the evils to which our gardens are subject, nor for universal adoption, but we know from experience that its judicious application will enable one to have a good supply of vegetables through the hottest and dryest summer.

Strawberries, well mulched, are not only rendered more productive, but continue much longer in bearing. Raspberries are benefited in the same way. Tomato plants may be kept in bearing through the hottest weather and the most severe drouth, by covering the ground around them thickly with straw, litter or some other suitable material. It is too much, perhaps, to say that cabbages, lettuce, and turnips can be grown with success during our hottest and dryest months, but their season can be much prolonged by mulching, as can that of Irish potatoes and sugar corn. One year we planted two patches of Irish potatoes side by side, preparing the ground and manuring both alike. One of the plots, soon after the potatoes came up, and, after a slight hoeing, was covered between the rows and close about the plants with a thick coating of pine straw. Nothing further was done to it till the crop was ready to be taken up. The other plot was treated in the ordinary way. The crop on the mulched plot was a third heavier than that on the unmulched, and the tubers fairer; and while those on the unmulched plot commenced rotting as soon as the weather became hot, those on the other remained sound through the season. The land was sandy and the season uncommonly dry. Under other circumstances, the benefits of mulching might have been less decided, but we have never failed to find it an advantage.

The materials used for mulching are various—decayed leaves, pine straw, long moss, rice chaff, saw-dust, tan-bark, straw, hay, and vegetable refuse generally, and there is scarcely a place in city or country where one or more of these cannot be procured in abundance for garden use.

The time and mode of applying the mulch may vary with the character of the season and other conditions, but it should be put on while the ground is still moist, and, as a general rule, before the intense heats of summer set in. In mulching young trees it is best generally not to put the mulch close about the trunk, but leave a space of a few inches bare.

Mulching may do harm in some cases, perhaps, and judgment must be used in its application, as in every other operation of the farm and garden, but the benefits of it are great and unmistakable.

Cultivation of Celery, (Apium Graveolens.)

Celery is a native of England, and is there found growing wild on the borders of brooks and ditches. The unsightly weed which in its natural state no animal will eat, and even the insect tribe will not prey upon, becomes, by cultivation, an ornament to our dinner-tables, and a delicacy more universally liked than almost any other in the catalogue of vegetables.

Being a native of a cool, moist climate, celery is not grown with facility in this latitude, and much care must be bestowed upon it in every stage, from the minute seedling, which comes up with the earliest days of spring, to the solid white stem, crowned with its tuft of bright green leaves, which graces the Christmas feast.

The Seed-bed.—The time for sowing the seed is from 15th March to 1st April; good plants can, however, be made from April sowings if the season does not prove a dry one, as is usually the case, and delay the germination of the seed. Choose for the seed-bed a cool, moist spot, "shaded, but not under trees," (the books say,) but this is not essential. Early plantings can safely be made in open ground exposed to the full blaze of the sun. Spade deeply or plow thoroughly, and make all smooth and fine with the rake. Draw drills with the marker, twelve or eighteen inches apart, and sow not too thickly, and cover by rolling with a light roller. The object should be to make stocky, well-rooted plants with as little labor and outlay as possible. Many recommend the plants, as soon as large enough, to be drawn from the seed-bed and sprigged out to strengthen and multiply roots; but this is unnecessary, if sufficient room be given them in the bed where first sown, and the tops be shorn off with a scythe or sharp knife two or three times before the season for transplanting arrives. Thinning the seed-bed is also a good plan, and less laborious and uncertain than sprigging. Pick the beds early, and keep clean from weeds and grass, hoeing between the rows to loosen the soil and promote growth. Seymour's Superb appears to be the best variety for this locality; it makes stout stalks and bleaches nicely. The dwarf kinds,

recently introduced by the New York market gardeners, have not been much tried in the South, and perhaps would not be suited to the climate, as the tendency of celery here is to dwarf, not increase in size and length.

Transplanting.—As celery is wanted for winter use, and relished only in cold weather, no object is gained by early transplanting; August, or, even better, September, is time enough to commence, and more success will attend the late than the early set crops. It requires low, moist, rich soil, but draining sufficiently well not to have water in the subsoil; and, moreover, it must absolutely grow in dung. Half-rotted stable compost is perhaps the best material for fertilization; and the English gardening books recommend highly liquid manure. Care must be taken, however, not to put the plants in hot, unfermented manure largely composed of crude, undecomposed materials; not one plant in a thousand will live if so treated, and the few that survive will show us miserable specimens. Peruvian guano, doubtless, if added to the compost, would materially improve it, as it appears to be particularly adapted to leaf crops.

After plowing or spading, and thorough pulverization of the ground, lay it off in deep and wide trenches with the plow, four or five feet apart, and deposit therein the compost, and cover with surface soil; set the plants seven or eight inches apart in the rows, care being taken that each plant shall be fully rooted and firmly placed, with the earth packed tight about them—this is important, and will go further to ensure success than any one other point. The crowns should be kept well above the surface, so that no earth falls into them, as recently transplanted celery is particularly liable to rot in the crown. Set in the evening, and, if possible, after a rain; watering will not be needed if the plants are properly firmed. Nothing more will be required but to keep clean by frequent hoeing, (which also promotes growth,) until the plants are sufficiently grown for

Earthing up.—The object of this operation is to bleach the green stalks, and give them delicacy and crispness. Most gardeners begin this too early, and before the plants are sufficiently grown. When once commenced it should be proceeded with rapidly; three or four weeks is quite enough time to bleach the longest stalks. The spade is the only implement which should be used, and the sides of the beds must be kept as perpendicular as possible, and the top between the plants as flat. In beginning to earth up, the first thing is to handle up the plants, as it is called—that is, to bring the stalks, which in the natural state lay flat upon the surface upright with one hand, whilst with the other the earth is brought around, so as to retain them in that position, carefully preventing earth from falling into the crowns. Now line the beds two and a half feet wide with the spade, and remove the earth from the intermediate space, and place it smooth and flat on the top of the beds, working it carefully between the plants, bringing the sides up square from the bottom. The hoe must not be used, for if the beds get peaked on top it will be found impossible to proceed with earthing up, how great soever may be the space between, from which to take the earth. Celery keeps well out of the ground

if full grown, and will continue to grow and bleach if placed in narrow trenches and not too closely packed to avoid heating, but its flavor and delicacy is injured, although its appearance is improved; the practice is much resorted to by Northern market-men for their winter supply.

Charleston, April 20th, 1870. A. B. ROSE.

A Fine Geranium--Mrs. Pollock.

This is one of the most desirable of the variegated geraniums for pot culture, but does not stand our hot sun very well in the open border. In the green-house or parlor, however, it should have a sufficiently sunny exposure to bring out its colors. The ground color or disc of the leaf is deep green; next comes a zone of bronze crimson, the margin of which is tinted with scarlet; then a belt of light green; and the margin of the leaf is a clear yellow. The flowers are dark scarlet in good-sized trusses, borne on short foot-stalks.

Propagating Plants by Budding.

Budding consists in taking a bud with a portion of the bark adhering from one plant and inserting it below the bark of another plant. It will succeed only where there exists a close relationship between the two plants which we seek to unite. The science of botany, aided by practical experience, enables us to determine the necessary affinity.

The only implement required in budding is a sharp, thin-bladed knife. Budding knives are manufactured of various patterns, generally with an ivory

handle made very thin at the end to be used in raising the bark, but any keen-edged knife will do. The operation is thus performed:

Upon a smooth place on the north side of the stock, cut a longitudinal slit an inch or more long. Across the top of this, cut a transverse slit from a quarter to half an inch long, so that both slits, taken together, shall resemble the letter T. (Fig. 1.) Next, cut from your stick of buds a thin slice of bark, with a little wood in the central portion of it, entering the knife about half or three-fourths of an inch below, and bringing it out about as far above a bud. (Fig. 2.) This slice of bark and wood, taken together, is called a *bud*, (fig. 3,) the part of the bud which grows into a twig being technically called its *eye*.

Fig. 1.

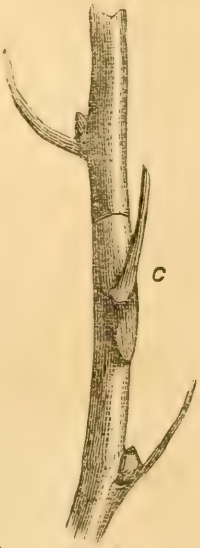


Fig. 2.

With the ivory haft of your budding-knife, or, if you have not such a knife, with any little wedge of wood or ivory, raise up the corners of the slit in the stock. Taking hold of the bud by its foot-stalk, enter it, and gently push it down to the bottom of the incision. The eye of the bud will now be from one-fourth to three-fourths of an inch from the transverse part of the slit. The part of the bud, if any, projecting above this transverse slit, should be cut off, by passing the knife through it, into the transverse slit again, so that the upper end of the bud and this transverse part of the slit shall make a good joint together. (Fig. 4.) Bind the bud firmly with shreds of bass-matting, so as to cover every part of it except the eye. (Fig. 5.) Woollen yarn or corn husks will answer when no matting is at hand. These ligatures should be removed or loosened as soon as the bud has firmly united with the stock. The stock (trunk or branch) should be from an eighth of an inch to not more than an inch in diameter.

Fig. 3.

Fig. 4.

Fig. 5.

The buds used are of the present season's growth, and must be well developed. The operation may be performed at any time when such buds can be procured, provided the bark of the stock will part readily from the wood. Buds put in early, as they may be in our climate, make considerable growth the same season, while those inserted later often remain dormant till the next spring.

The operation of budding is an exceedingly simple one,

which anybody can perform, but it requires *care*, and should be *rapidly performed, with a sharp knife, and fresh, ripe, healthy buds.*

A few days after budding, the stock should be cut off within ten or twelve inches of the bud, and when this has grown three or four inches, the stock may be cut off again near the budded shoot. All sprouts, as they appear on the stock, must be removed.

Experiments with Lettuce.

Boston Curled Lettuce.

Last winter we received from the Department of Agriculture a package of Early Simpson Lettuce, and from various seedsmen a large number of other varieties, new and old, all of which were subjected to careful experiment, side by side. A few of them developed qualities worthy of notice.

1. *Hammersmith or Hardy Green.*—This is an old and esteemed sort for winter growth, but in our experiment, this season, proved nearly worthless, generally failing to head and running quickly to seed.

2. *Brown Dutch.*—This is always trustworthy as a heading lettuce. Good but not handsome.

3. *Felton's Indian Head.*—Seed of this variety was received from Edward J. Evans & Co., of York, Pa. It resembles the Indian Curled, but is superior to that variety. It made a rapid growth, and produced the largest and most compact heads of any variety grown.

4. *Boston Curled.*—We were indebted to Mr. Jas. J. H. Gregory, of Marblehead, Mass., for seed of this most beautiful of lettuces. Our plants were the admiration of all beholders. Some of them measured fifteen inches in diameter, and presented the form of a perfect rosette. The leaves are finely frilled and curled, the inside ones being closely packed and becoming blanched. It makes no solid head, but is edible and tender throughout, and at all stages of its growth; its color is a bright green, inclining to golden in the interior. Some of the solid varieties may be more crisp and high flavored, when in perfection, but the Boston Curled is the handsomest lettuce we know, and can be depended upon at all times. The seeds are white.

5. *Early Simpson.*—This vies with the foregoing in beauty and grew even larger, but less compact. It made rather loose heads, but is very crisp, tender and fine flavored. The leaves are beautifully ruffled, and of a pale, golden green. It is excellent in its season, but runs quickly to seed. Seeds white.

6. *Perpignan.*—Seeds were received from Mr. Jas. J. H. Gregory, who recommends it as remarkably reliable for heading in summer. With us, its capacity for withstanding the heat and drouth remains to be tested; but during the spring it headed more uniformly than any other variety in our garden, but the heads were not so large as those of Felton's Indian Head. So far we are much pleased with it.

Later sowings of all these sorts are on trial to test their comparative merits as early summer crops.

Ladies' Ear-Drop Apple.

This curious apple originated in Westchester County, N. Y. The apples are all as nearly alike as so many peas in size, shape and color.

Color, a beautiful lemon yellow, with a brilliant scarlet cheek; fruit acid, and of second-rate flavor. As an ornamental fruit for the table, this apple is not surpassed in beauty of appearance.

A Pest Prescription.—The London *Floricultural Cabinet* promulgates a remedy for the green fly, mealy bug, thrip, and kindred insects, which infest house and greenhouse plants. The editor states that, from experience, he knows it to be effectual:

"Dissolve half an ounce of bitter aloes in a gallon of water. With this wash, syringe your plants so as to wet them under as well as over the leaves. If the enemy be there, he will be destroyed; if he be not there, he will not come. Whether it be the nauseous bitter on the surface, or the smell, or both, we know not; but, so far as it has been tried, infected plants may be put all around one so treated, and there will be no sign of thrips, bugs, or aphides, even if the others be covered.

The Lungren Squash.

We find in Tilton's *Journal of Horticulture*, the following account of the origin of this curious and valuable vegetable:

The Lungren squash originated at Volusia, Fla., in 1867, under the following circumstances: A gentleman living in Orange County, Fla., planted some seeds of pumpkins which he obtained while in the Seminole Nation during the last Indian war in this State. Amongst these seeds were some that pro-

duced a curious-looking pumpkin, (as he called it,) one of which he gave to me. I planted the seeds amongst some other varieties, and I suppose they must have hybridized; for the next year, on planting seeds saved from one of these squashes, I was surprised to find that some of the plants were brilliantly marked on their leaves. I thought that it would be a curious if not valuable addition to the squashes of the North; so I sent seeds of this new variety to my friend E. F. Washburn, of Boston, with the request that he would give them a trial. He was so pleased with them, that, in 1868, he brought it to the notice of the public as a really valuable addition to the list of winter squashes.

No squash similar to this grows in Florida, save the one with plain or unmarked foliage. It has all the good qualities, with but few of the objectionable ones, of winter squashes.

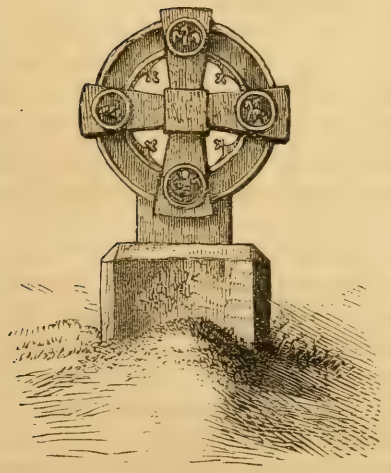
The Seminole Indians living amongst the Everglades and on islands in Lake Okechobee, in the southern extremity of the peninsula, have some really valuable varieties of vegetables, especially pumpkins, squashes, melons, beans, peppers, etc., as well as many vegetables with which the people of the North are but little acquainted. Many of these seeds would prove valuable additions to our catalogue of vegetables.

During the last Seminole war, the United States volunteers found, on some of the islands in Lake Okechobee, small fields or patches of corn, pumpkins, melons, and beans, seeds of which were brought home with them. One of these really valuable seeds was the Seminole sugar pumpkin—a small pumpkin which would not weigh more than four or five pounds each; very sweet, fine flavored, long keeping, and highly prolific, a single vine often producing from forty to fifty pumpkins. These pumpkins are now quite common with us, and are highly prized for their good qualities, being considered the best we raise.

H. G. LUNGREN, M. D.

Volusia, Fla.

Head-Stones



There is no place perhaps where bad taste is more conspicuously exhibited than in our churchyards and cemeteries. Unsightly monuments, inappropriate emblems and absurd or boastful inscriptions, are painfully numerous. A clergyman suggests the accompanying as a hint toward an improvement in the first and second particulars—the form being pleasing, and embracing suitable Christian emblems. He says:

The cross, as a symbol of the redemption, of the resurrection and eternal blessedness beyond the grave, is as old as Christianity, and its proper and reverential use must be apparent to every one. It is the most expressive of all Christian emblems, and it should be the sign which the Christian most honors,

in every place where it may be appropriately set up, and especially in the sleeping-places of the dead.

The base of this head-stone should be ten inches in thickness, two feet wide, and twenty-one inches in height. The circle which supports the cross, and is itself a symbol of eternity, should have a radius of fourteen inches. The base should be firmly fixed in a heavy stone, planted beneath the surface of the ground. Brown stone would be a suitable material for this monument.

Inscriptions should be modest and simple, containing little more than names and dates, with, perhaps, an appropriate text of Scripture, expressive of Christian humility or hope. They should not be arrogant or boastful, and, above all, they should not "lie like an epitaph."

Stock and Natural History Department.

Domestication of the Ostrich.

Among the conquests made by Science from Nature, within the last decade, is the domestication and acclimation of the ostrich. This consummation has been effected by and under the auspices of that useful body, the Societé d'Acclimatation of France.

This majestic bird is the largest of the feathered tribe extant. It is a native of Africa. The continent of South America possesses an indigenous variety of the same genus, but it is smaller, and in some respects differs materially. The bustard, which once strode over the downs of England, belongs to the same class. It is extinct in that island, but found in Norway and Sweden. The ostrich, though not without wings, never rises from the ground, using these appendages rather as the boatman does the oar, as an aid to propulsion They are remarkbly fleet of foot; and the African bird, with a man on his back, will surpass the fleetest horse, and is sometimes

used as a carrier. The American bird has been domesticated, and, among other merits, it is valued as a guard, a protector, to the other fowls of the poultry yard. The African bird may justly be called the king of birds, whether we consider its size, the quality of its flesh, its eggs, its feathers, or its fleetness and ability to carry weight. Its flesh is abundant, succulent, well tasted, resembling somewhat that of the hare, and, when roasted, like that of the ox, it is much esteemed. That distinguished scientist and benefactor to humanity, the late Isidore Geofroy St. Hilaire, in a conversation with the writer, in 1860, said, "Very certainly it will come to be sold like any other *butcher's meat* in the markets." Time has corroborated his prediction.

M. Bouteille, of the Zoological Society of the Alps, has reared them in his courtyard, at Grenoble, (France,) the latitude of which is about forty-five degrees north. Three layings, of one female, in 1866, gave him forty-five eggs, weighing in all one hundred and forty-five pounds. When cooked, they have been found very good, differing little, if any, from other eggs; but, in the preparation of creams, they are incomparably superior.

Owing to the thickness of the shell, they keep long, and one ostrich egg is deemed equal to twenty-four hen eggs. The shells themselves have a value, for they bring in the market about sixty cents each. The female lays with remarkable regularity every second day, at three o'clock, afternoon, without a variation of ten minutes before or after. The experiments at Grenoble showed that the male prepared the nest, (on a hillock in the sand,) and sat at least twenty hours a day, the female sitting but a few minutes in the middle of the day. The time of incubation lasts forty-four days. The female takes great care of her young. They are docile as any other fowl, and come to know the attendant. In ten months the young grow to their full size.

The plumes, or feathers, are valuable, and much sought. In 1866, which was the least important of the three years of Mr. Bouteille's experiment, he says, "The plumes of our adult ostriches, after moult, were sold for £11 18*s.* 6*d.*—reckoning the young ones sold, the profits amount to the sum of £22 4*s.* 6*d.*, on one pair of birds."

The first ostrich known to be hatched in captivity was on the 2d September, 1857, the property of Mr. Hardy, of Algiers. In ten years, from 1857 to 1867, forty-two couples laid eight hundred and seventy-five eggs, and hatched one hundred and sixty-two young ones. Mr. Hardy's flock of twenty-one, male and female birds, in 1866, gave him a total of 5,918 francs 20 centimes,* or 281 francs 80 centimes per head.

The domestication of the ostrich at the Zoological Gardens at Florence, has also been very successful. Prince Demidoff, who gives an interesting account of two broods, says that the first incubation was conducted solely by the male, the female only coming near the nest when he retired to eat, and turning the eggs over carefully, after which she retired. The second hatching was carried on by the male and female in turn, (during a torrent of rain, to pre-

* The franc, 96 cents.

serve the nest,) both sat on it, one not offering sufficient cover. The birds were tame, and permitted strangers to approach.

Mons. Heritte, the French Consul at Cape Town, (the southern extremity of Africa, latitude, 35° S.,) writes as follows: "The domestication of the ostrich is zealously prosecuted here. At the age of from six to eight months the young birds provide for themselves, and only get a small quantity of maize, (Indian corn,) or other food, to attach them to the place where reared. They are very fond of the prickly pear and the seed of the aloe. The young ones are fed on leaves cut small, and all kinds of vegetables, carrots, lettuce, thistle, etc. When three days old they get, besides the above-mentioned, a little corn and barley. They are kept warm at night on straw, hay or wool, in a warm room, a kitchen for instance, and are never permitted to go out till the sun is up, and are kept supplied with food during the whole day.

The feathers are plucked when they are eighteen months old, during the months of August and September. Last year one person received in London £98 14*s.* 6*d.* for the feathers of eighteen young ostriches, though they were in bad condition, having been, from want of experience, plucked at improper season. At the Cape, ostrich rearing is considered to be almost as profitable as keeping Merino sheep. This great acquisition is in great main due to Mons. Chagot, a Parisian merchant, who, seeing the gradual decrease of ostrich feathers, and the probable extermination of the race itself, at no distant day, offered a prize of 2,000 francs for the domestication of the bird in France, Algiers or Senegal. He has thus enrolled his name among the benefactors to humanity.

Besides the ostrich, M. Isidore Geofroy St. Hilaire, in his valuable work upon the domestication of useful animals, mentions the nandow, the cassowary, the emeu, as deserving attention on account of their alimentary qualities, and to these he applies the term "butcher-meat birds."

The emeu has bred in France, Belgium, England and elsewhere, and exhibits an extraordinary power of resisting cold. In the Garden of Plants, in Paris, one lived for several years, in the open air, sleeping in winter half covered with snow, protected by its impenetrable fleece of feathers. Mr. Prevost says that its flesh may be compared to that of the ox. The thigh of the emeu will weigh more than twenty-two pounds, and is much esteemed, the taste being something between that of the turkey and pork. Its eggs are very delicate, and of exquisite flavor. Its skin, covered with down and very thick, serves for valuable rugs or carpets. The Society for the Acclimation of Animals has offered a gold medal, of the value of 1,500 francs, for the domestication of the emeu. This is one of the wingless birds that still exists, but like the dodo, which lived in our time, is destined to speedy extinction, unless efforts be made to introduce it into countries of which it is not native.

It is written: "And God blessed them, and God said unto them, be fruitful, and multiply, and replenish the earth, and subdue it; and have dominion over

the fish of the sea, and over the fowl of the air, and over every living thing, that moveth upon the earth."

Duty to this explicit injunction is a necessary corollary, and its neglect surely inflicts a penalty which finite man fails to attribute to the proper cause; but as all things lead to all things, and creations are linked and dependent one part upon another, no part can be suppressed or dispensed with, without mutilating the original plan with a consequent penalty. There is no insect, however insignificant to our appreciation, without a useful connection. It is of major import, then, that we should know those laws by which they have being, and apply them for preservation, and useful application, else we shall surely incur a penalty even unto death. The immortal bard has said, "Dire events from trivial causes spring." There is something extremely melancholy in contemplating the loss of a species, a germ of life, a link in that great chain of creation given for use, undervalued, lost to the world forever through ignorance, to which there is surely a penalty attached.

The Imperial Society of Acclimation, of France, has been foremost to realize, even at this remote period, the necessity of protecting and utilizing great natural gifts. Among the victories which that most useful society is achieving, or has achieved, is the saving from extinction, and for man's use, the ostrich. A gift from science to civilization. The consequences of such achievements are potent for good, and extend beyond the ken of man. Victories in accordance with Divine intention! Sunbeams in the march of man's dark pilgrimage!

The domestication of the ostrich is but one example of what that society has already accomplished. It has scarce entered upon the threshold of its usefulness in one line, considering the thousands of animals known, and the units that have been domesticated.

A MEMBER OF THE IMPERIAL SOCIETY
OF ACCLIMATION, OF FRANCE.

Extraordinary Sagacity of a Horse.—Mr. J. Trumper, of Lake End House, near Windsor, writing to *Bell's Weekly Messenger*, says: "I have, in my farmyard, a well-bred nag filly, a granddaughter of Kingston, and all the winter it has had two cart colts for companions. The other day, however, we took away the two colts to work, and of course the filly was exceedingly restless. The yard is closed by two large folding-doors, which are fastened by bolts to a strong post in the ground, and also secured by a strong latch. To our surprise the filly was constantly getting loose, and, wondering how she made her escape, we determined to watch her. We soon saw her come up to the door and take up in her teeth one of the bolts, which she lifted up, and, knowing that it would fall again into its socket when she let go, she turned it round to lodge its handle on the piece of iron made for it. She then, by pressing her nose very hard on the thumb-plate, lifted up the latch, and, giving the gate a push, rushed out. I take this to be an extraordinary case of sagacity in a three-year-old filly."

The Gregarious Grape Caterpillar.

Fig. 1.—Colors.—(*b*) Honey-yellow; (*c*) whitish; (*d* and *e*) black and orange.

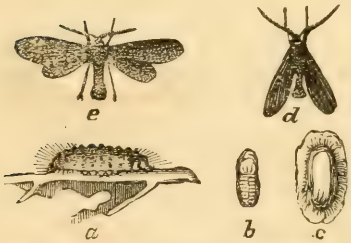


Fig. 2.—Colors, black and yellow.

We copy from that admirable monthly the *American Entomologist and Botanist*, (R. P. Studley & Co., St. Louis, Mo.,) the following description and illustration of the Gregarious Grape Caterpillar:

"During the months of July and August, the leaves of the grape-vine may often be found denuded of their softer parts, with nothing but the veins, and sometimes only a few of the larger ribs left skeleton-like, to tell of the mischief that has been done. Very frequently only portions of the leaf will be thus denuded, and in that event, if we examine such a leaf closely, we shall find the authors of the mischief drawn up in line upon the yet leafy tissue, with their heads all toward the margin, cutting away with their little jaws and retreating as they feed.

"These little soldier-like files are formed by worms in black and yellow uniforms, which produce a moth popularly known as the American *Procris*. The eggs from which they hatch, are laid in small clusters on the underside of the leaves, and while the worms are small, they leave untouched the most delicate veins of the leaf, which then presents a fine net-work appearance, as shown at the right of Figure 2; but when they become older and stronger they devour all but the larger ribs, as at the left of the figure.

"When full grown these worms disperse over the vines or forsake them entirely, and each spins for itself a small, tough, whitish, flattened cocoon, (Fig. 1, *c*,) within which, in about three days, it changes to a chrysalis, (Fig. 1, *b*,) 0.30 inches long, broad, flattened, and of a light, shiny, yellowish-brown color. In about ten days afterwards the moths (Fig. 1, *d* and *e*) begin to issue. This little moth is the American representative of the European *Procris vitis;* it is wholly of a black color, except the collar, which is of a deep orange, and the body ends in a broad fan-like, notched tuft, especially in the male. The wings are of a delicate texture, reminding one of crape, and when the insect is at rest they generally form a perfect cross with the body, the hind wings completely hidden by the front ones, which are stretched out straight at right angles, as in the genus *Pterophorus*, to which belongs the Grape-vine Plume. We have, however, on one or two occasions found the American *Procris* resting in the manner shown at Figure 1, *d*.

"This is the only North American Grape-vine feeding caterpillar which has a gregarious habit, and as gregarious insects are always more easily

subdued than those of a solitary nature, the American *Procris* need never become very destructive. Its natural food is, undoubtedly, the wild grape-vines of our forests, and the Virginia Creeper, and Mr. J. M. Jordon, of St. Louis, has noticed that while it very commonly attacks the foliage of the Concord, yet it never touches the Clinton and Taylor in his vineyard—a taste which is remarkable and not easily accounted for, since the foliage of the latter kinds is more tender and generally more subject to insect depredations than that of the former.

"There are two broods of this insect each year with us, some of the moths from the second brood of worms issuing in the fall, but the greater part not leaving their cocoons till the following summer."

The Squash Vine Borer.

During the months of June and July, (perhaps earlier in some parts of our Southern country,) squash and cucumber vines are frequently observed to die very suddenly, and without any apparent cause. The leaves turn yellow, droop and wilt; the fruit shrivels, and the whole plant seems struck with death. On examination, the vine is found hollow and rotten at the base, breaking off readily at the surface of the ground. Further investigation will show the cause of the destruction in the shape of a white worm, about three-fourths of an inch in length, with a black head and numerous spots on the body. This is the Squash Borer—the larva (fig. 1) of the *Ægeria Cucurbitæ*, (fig. 2,) one of the most insidious and dangerous enemies which the gardener has to deal with. The cut-worm may be dug out and crushed; beetles and worms infesting the leaves, and other external parts of a plant, are easily found and subjected to the pressure of the thumb and fore-finger; plant lice and minute insects generally can be treated, with at least a hope of success, to dustings and sprinklings of deadly powders and decoctions, but the borer works in the dark, and before you are aware of his presence, the mischief is generally accomplished. Your lime, ashes and sulphur, and your tobacco water, quassia tea and carbolic soaps, are alike ineffectual here, for the reason that they cannot reach the enemy.

Fig. 1.

Fig. 2.

We have occasionally saved a plant by means of a seasonable surgical operation—cutting out the worm with a small knife—but, as a rule, a plant perforated by the borer will die, whatever you may do. The thing to be sought is a preventive.

The moth, (fig. 2,) which has an orange-colored body, spotted with black, and hind legs fringed with orange-colored hairs, deposits its eggs on the vines close to the roots where the larvæ commence operations by perforating the stem, when they proceed to devour the interior. What we want, then, is some means of preventing the moth from depositing the eggs, or of destroy-

ing them before they are hatched. Who has an effectual preventive or remedy? The books furnish none that can be relied upon, though covering the vine with earth, or, better still, with ashes, for several inches from the base, has sometimes proved effectual, the moth not liking to deposit its eggs except near the root, or the worm finding it more difficult to pierce the vine elsewhere. To be of any service, this remedy must, of course, be applied in season.

We have observed that some varieties of the squash are less liable than others to the attacks of the borer, having secured good crops of the little Canada Crookneck, when such kinds as the Hubbard and Boston Marrow were entirely destroyed.

We propose this season to try various applications to the base of the vines, with the hope of finding something that will prevent the moth from depositing her eggs upon them. Will not our readers do the same and report, if any satisfactory results are attained?

Breaking Oxen to the Collar.

Mr. Editor: I have a pair of oxen that travelled from home to Augusta, the last *three* trips they made, in *one* day, a distance of twenty-eight miles, carrying two heavy bales and many *et ceteras*. I used traces and collar. I tried the same thing with the same oxen with the yoke, but they could not do it.

The yoke worries them, as careless and ignorant persons often put the load too much on their necks, or else not enough; and, even when that is rightly adjusted, they often pull against each other. If the collar and hames are rightly fitted they can pull as much as with the yoke, if not more. I cut a common horse-collar at the bottom, then take a pair of horse hames, making the holes for the upper hamestring about four inches lower than for a common horse, so as to raise the hame iron, to which the trace hooks, above the point of the shoulder. I then take a piece of bagging and wrap it firmly around the hames, fastening them permanently to the collar, folding and stitching at each fold some two or three times around the collar and hames, meanwhile cutting holes for the hame irons and breastrings. Collars thus made perfectly protect their shoulders. My oxen plow with a single line, traces and backband. I use the bridle entirely, as they yield more readily to the bit, and any plowman can control them; but with chains or ropes around the horns they are at times difficult to manage. The bridle is very simple, with a buckle at the top of the headstall.

This is the way I broke my oxen to draw with traces. I hitched them to the cart with the yoke, and bored a hole just in their rear through the cart tongue. To this I fastened the doubletree of my two-horse wagon, putting the collars on behind the yoke and bow. I fastened the traces so loose

that they pulled altogether by the yoke at first, but gradually tightening them so that they were soon pulling all by them, only holding up the tongue by the yoke. I immediately hitched them to the two-horse wagon, and they now pull as much as any two mules.

You need not use hipstraps, as they throw the collar on their neck and steady the wagon down hill, the collar shipping back to the shoulder as they start to climb the next hill. Mine have been plowed for three years, standing it admirably; and, during cold or cool weather, they do about as much as a slow mule. During hot weather, I generally plow them alternate days, feeding them on the days I plow with them, at morning and noon, and turning them into the pasture at night, dispensing with one feed a day. I give them when working near a peck of raw cotton seed, a bundle of fodder, or shucks, or pea vines. By mixing shelled corn, a smaller quantity of cotton seed will do. By mixing salt freely, the seed does not affect their bowels. I am a great advocate for *ox-power*. It is cheap and very reliable. A strong ox moves a heavy plow with seemingly great ease. They are great for hauling about a plantation,—great for preparing land; in fact, great for anything where power and patience are required.

Lots, S. C. J. J. McDANIEL.

How to Make Hens Pay.

The question, "Do hens pay?" has long ago been settled. With eggs at forty cents per dozen, there is no room to doubt that they *do* pay, and well, too. It becomes, then, a matter of some importance to know *how* to make them pay. I have had a life-long experience in this line, and will venture an opinion, in the face of the thousand and one already given to the public. In my management of fowls, I have labored to reduce all "rules" and "directions" into one short, simple and comprehensive form. I give it below:

A comfortable, clean, well-ventilated, dry and airy house; a dry and sunny range, free from any disturbing influences; access at all times to clean water and plenty of gravel; good and liberal feeding twice a day, morning and night; good nursing and careful oversight at all times; a careful separation of breeds and roosters, or a judicious crossing of breeds; plenty of nests for all the hens, and an unceasing war against vermin. These things, with no one of them left out, will *ensure success*, and constitute the sum and substance of all the books ever written upon this subject. Attend to these things, and you will find that fowls, in proportion to capital, pay better than any other stock upon the farm. Eggs always command a ready sale, and always sell at their full value. And a very important item would be taken away if fowls were entirely withdrawn from the market. There is pleasure, there is economy, there is *money* in this business, managed by the above simple rule. Try it.

B. W. JONES.

[*In the American Farmer.*

Department of Mining and the Mechanic Arts.

Iron and its uses—The Atlanta Rolling-Mills.

The use of iron is coëval with the creation of man. Whether Eden's gates were hung with iron hinges, or whether the flaming sword that kept the way of the tree of life, was of iron, no one can tell; but sure it is that Tubal-Cain, only a few generations from Adam, skilfully instructed those who wrought in iron. The prophet Isaiah speaks of the tinkling ornaments about the feet of the women in his day, of their round tires like the moon, and of their crisping-pins—and who will say these were not made of iron? From that day to the present, all along down the stream of time, those nations that best utilized this simple ore, whether in making chariots or breast-plates, or currency, or weights and measures, or implements of war, have superseded their friends or foes in progressive development. To-day, in this noisy nineteenth century, when progress is stamped upon the very countenances of men, iron is used as well to annihilate space and time, as it is to tuck up the headgear of the gentler sex.

With all this universality of uses, how many of our readers are familiar with the process of converting the ore into merchantable iron? How many less are aware that the single State of Alabama could supply the United States with iron for a century to come?

The crude ore is simply dug from the earth, and kilned with dry wood or charcoal to burn out the dirt. A single hand working at this business burns one kiln while he makes another, and earns about three dollars per day by delivering the burnt ore at the smelting furnace for three dollars per ton. Smelted with charcoal, and "fluxed" with limestone, the molten ore is poured into gutters made in wet sand, several small gutters running off at right angles to a large one; these are called respectively the "sow" and "pigs,' and hence the name of "pig iron," which is worth forty dollars per ton.

This pig iron is again heated to a liquid, and while in the furnace worked with an iron hoe, as the plasterer works his mortar, and when thoroughly "puddled" is rolled into lumps of about a cubic foot in size, and placed between a pair of immense iron "squeezers," that move like the jaws of some huge animal, and there masticated until freed of many of its impurities. When ready for deglutition, instead of being swallowed, it is placed between two rapidly-revolving iron rollers that are encircled with concave grooves; by passing between these rollers, the shapeless plug of white-hot iron is drawn out into a long round bar, which, being again passed between similar rollers encircled with square grooves, becomes a flat bar. These bars may again be cut, melted and carried through the same process to refine the iron, and every time thus treated, become more tenacious and malleable, and hence more valuable.

Cotton-ties are made of the best iron. The flat bars are again heated and rolled into inch-square bars, and cut into pieces just large enough to make a tie. This plug, or piece, is again heated and rolled into the tie.

Railroad bars are not always made of the best iron. A flat bar of new iron, four and a half feet long, one inch thick, and eight inches wide, is used to make about three-eights' thickness of the "head" or top of the T rail, and the same for the base or "flange." The upright, or "neck," portion of the T is made of scraps of any kind of iron, and often of worn-out railroad iron bars that are cut into pieces of required length by a massive pair of scissors, that clips them in two as easily as a tailor does his thread. These two flat bars, with their intermediate pieces of old or scrap iron, are regularly laid together, and weighed accurately until a sufficient quantity is in the plug to make a new bar. This is then carefully laid in the furnace and heated to white heat, when it is again carefully handled, and run through between revolving rollers in grooves shaped like the bar on its side, thus ⊣. In its last passage through the grooves, the bar, like a great yellow snake, is drawn out on a carriage of rollers exactly as the log is upon the carriage at a saw-mill, and, by its own weight straightening itself, is drawn by levers against two circular saws, twenty-eight feet apart, which, revolving 1,400 times a minute, cut off the ends of the bar as easily as if they were wood. Two minutes after the heated plug is taken from the furnace, it is shoved aside, as a complete railroad bar, to cool. As the head of the T cools more rapidly than the flange, the bar is again purposely bent or curved about two inches in an opposite direction. When cool, if not perfectly straight, each bar is placed under pressure to make it so, and then each end is successively punched, each stroke making a hole in the neck of the bar. These holes are necessary to receive the bolts that fasten on either side of the neck the splice of bar iron which makes what is called a "continuous rail." Railroad iron is worth $80 per ton.

The Briarfield Iron Works, on the Selma, Rome and Dalton Railroad, fifty-five miles above Selma, Ala., turn out, perhaps, the best iron in the United States, and their best merchantable iron is unsurpassed in the world. Much of the pig iron made there, and at the Shelby Iron Works, six miles from Columbiana, Ala., is sent to the rolling-mills, two miles above Atlanta, Ga., and there converted into merchantable iron of every kind and description, both wrought and cast.

These mills, though completely destroyed during the war, have been rebuilt with a capital of $400,000, soon to be increased to half a million; their buildings are 360x150 feet. In addition to the tons of wrought and cast iron they throw upon the world, they daily supply a demand for fifty tons of railroad iron. From 100 to 1,000 tons of coal, and almost millions of pounds of both scrap and pig iron are kept constantly on hand; their motive power in the several departments is six engines, four of thirty horse power each, one of eighty, and one of one hundred and fifty. This last was made in Columbus, Ga., for the Confederate Government, and it is said to be unsurpassed on the continent in its mechanism. It has a balance-wheel that weighs thirty tons, which

revolves eighty-five times a minute. A point on its circumference goes through the space of a mile in a minute. Will some of our lady readers tell us the diameter of the wheel?

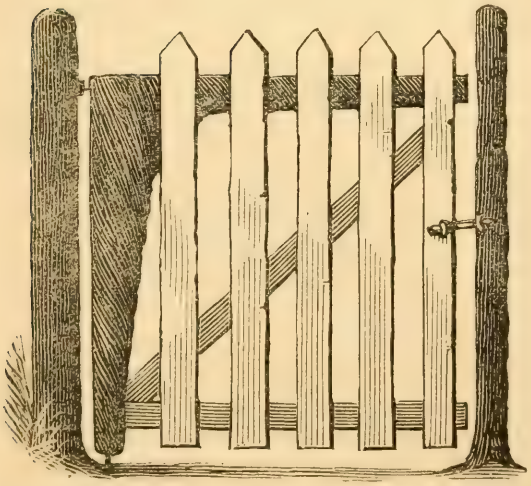
These five engines have nine boilers, which have no grate furnaces, but are heated by heat escaping from the smelting furnaces. Their water is from tanks holding 1,000 hogsheads, which are supplied by a continuous flow of pure spring water through a three-inch iron pipe, twenty-three hundred feet long, and eighty feet higher at its mouth than at the source. Can any of our gentleman readers tell us the force required to create this flow?

Three hundred and twenty hands are employed in these mills, of whom seventy-five are negroes. The whites earn about three dollars daily on an average; the negroes about one dollar. Where simple muscle is required, the labor is about equal in value. Where intellect is needed, the white man is more valuable, and often worth four or five times as much as the negro in the same department.

The company have a store in connection with these mills, where a stock of $25,000 worth of goods are laid in each season.

D. WYATT AIKEN.

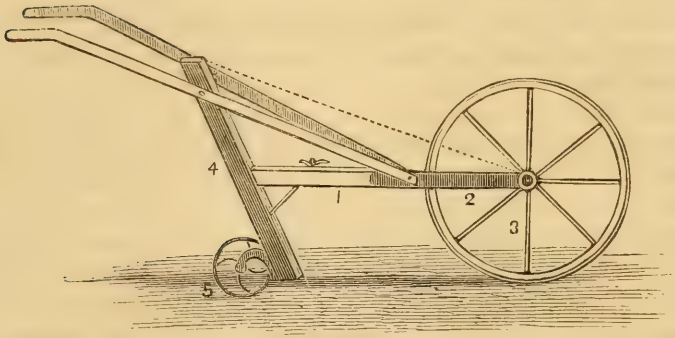
A Strong Farm Gate.



Nothing is more difficult to keep in good repair than the constantly used gates on a farm; and great is the annoyance and frequent the damage caused by their defects.

The first essential in the construction of a farm-gate is strength. A planter on one of our neighboring islands secures this by using for the parts which bear the principal strain a "knee" of live oak, roughly hewn, as shown in the foregoing sketch. To this may be nailed pales, boards, or cedar, or other sticks, flattened on one side; and a gate thus made, will last, if properly hung, almost a life time. The post to which it is hung must be heavy and deeply and firmly fixed in the ground. Other wood can, of course, be used, where the live-oak does not abound, provided the proper form can be obtained.

A New Garden Hand-Plow.



No. 1. Beam, 18 inches. No. 2. Slat, 15 inches. No. 3. Diameter of wheel, 27 or 30 inches. No 4. Foot, 33 inches; 15 inches from ground to the beam. No. 5. Back wheel, 7 inches diameter.

Mr. Editor: As you are deeply interested in agricultural pursuits, I have sent you a sketch of a hand-plow, which I have, by frequent altering, etc., brought to suit my idea of what such an instrument ought to be. I have used it for more than a year, and kept my garden, of more than half an acre, in perfect order. It is simple, easily made, and not difficult to keep in order.

D. H. T., M. D.

Artificial Ice.

The most interesting of all the industrial developments of the country, to my view, is the conversion of water by artificial means into ice. In New Orleans, just on the bank of the Mississippi, where the raw material costs nothing, are situated the works where not only all the ice used in the city is made, but from which ice is now being shipped to all parts of the South, and one cargo has actually been sent to Philadelphia.

Aqua Ammonia is placed in receivers, and subjected to heat amounting to 110 lbs. to the square inch; the ammonical gas or steam thus created, passes from the receivers through tubes subjected to a flow of cold water, and in them condensed to a liquid; in this condition it escapes through small tubes into larger ones immersed in salt water, and thereby evaporation creates such a degree of cold in the salt water as to freeze, in a few hours, distilled water encased in galvanized iron cases standing in the salt water among the evaporating tubes. These cases are taken from the salt water, plunged into hot water, and inverted, when a block of ice weighing from twenty-two to twenty-five pounds slips out.

The company have six of these machines constantly at work, from one end of the month to the other, never ceasing to manufacture, though the laborers that attend them are worked by reliefs. As much ice is made on Sunday as

any other day in the week. Each machine is attended by six hands during the twenty-four hours, and each will make twelve tons of ice during that time. The innumerable blocks of ice are packed away in large ice houses, and sawdust or rice chaff placed between the ends of the blocks and on top of every tenth block, so as to be able readily to get out a block weighing about 200 lbs.

A machine, warranted to make 1250 lbs. of ice every twenty-four hours, with a boiler of two-horse power for its pumps, and a similar boiler for the ice machine, a distilling apparatus, and the ammonia required, costs something over $8,000. In New Orleans, where this ice is worth $15 per ton, New York ice commands $20 to $25 per ton. Great prejudices at one time existed against this ice as being too soft, easily melted, peculiarly tasted, etc., but all these have died away, and the artificial ice is being almost universally used. Nowhere can science be seen more beautifully utilized than in an ice manufacturing establishment. D. W. A.

New Orleans.

Department of Labor and Immigration.

Labor and Wages.

The general tenor of the reports of the Department of Agriculture, as well as our own observation and inquiries, indicate a gradual improvement in the quality of the common labor of the South—that of the negro. The first wild notions of freedom, as something synonymous with idleness, has given place to soberer and more correct ideas, if not always to a corresponding practice. Independent farming without capital and without forethought has proved so disastrous a failure that the dullest freedman can see that it "don't pay." These circumstances render the negroes more inclined than formerly to make contracts and to labor with such a degree of efficiency as his natural indolence and his ease-loving disposition will permit. Their work is still, of course, far below the standard of white labor, and not even what negro labor may yet become; but, as a rule, there is improvement, and we are glad to record it.

The system of "working on shares," though not so favorably looked upon as at first, is still too much in vogue. Some of the objections to this system are thus forcibly set forth in the Report of the Department of Agriculture for January:

1. It is not a voluntary association from similarity of aims and interests, but an unwilling concession to the freedman's desire to become a proprietor, or an inability to make prompt payments of wages in cash.

2. It is a complicated copartnership, opening the door to fraud on one side, and unfaithfulness and desertion on the other.

3. It is not equitable between the freedmen, as it renders impossible a proper discrimination between the industrious and the idle, the dexterous and the incapable.

4. It leaves uncontrolled and almost undirected those who have never been subject to self-management or self-restraint.

5. It almost invariably inspires exaggerated expectations, leads to improvident drafts upon an uncertain future income, and ends in disappointment and discouragement.

6. It debars the proprietor from exercising a control over the plantation, and its operations essential to present success, and the permanent improvement of the estate.

The whole history of cotton production in the past four years attests the importance of these and other objections to the share system. It is satisfactory neither to employer or employed. The best labor contract is the simplest—stipulated wages for faithful service, which should be paid promptly as agreed in cash, with an equitable portion reserved to the end of the year, both to secure the planter against having his cotton left unpicked, and to give the freedmen a surplus for accumulation, or the supply of other than daily wants.

As a consequence of the general inefficiency of negro labor wages are lowest where there is the least infusion of white labor, and the latter is not proportionably remunerated. It is a question whether better wages to the freedmen would not do much to still further improve its character, and in the end be more profitable to the employer as well as to the laborer.

Chinese Immigration—An Adverse View.

A writer in the Texas *Plow-Boy* zealously opposes Chinese immigration on the ground that it would retard our progress and demoralize our society. He concludes his article as follows:

We are now contending and competing with Eastern labor in the production of cotton, and were their climate such as ours, they, with their population and cheap labor, could furnish cotton to the English market at *four cents per pound!* What, then, would be the condition of our people? Bring the countless hordes of China here, and the result would be upon us at once; cotton would soon be a drug in the market, and we would have, in addition to the consequent financial embarrassment, a *pagan* population—unscrupulous idolators—who, in the process of time, would resort to a system of plundering and buccaneering for a living.

Men of the South, pause and reflect before you open the flood-gate of Chinese immigration. Are you willing to entail the curse of such a population upon your children? If the planters and freeholders of Virginia had possessed the moral courage to have promptly and decisively rejected and opposed the proposition of her majesty Queen Elizabeth, when she urged upon them the unfortunate system of African slavery, all the social evils and political horrors growing out of this system would not have so cruelly and unmercifully scourged our land. Negro slavery drove immigration northward, into that vast country bordering upon the lakes and the tributaries of the Mississippi, and built up in that country a system of white and free labor under which that section has flourished wonderfully, while our own country, of more genial climate, and richer soil, has languished, and even retrograded

in the path of progress. Norfolk to-day might have been what New York is, and Virginia and the Carolinas and Texas might now be on the highway of prosperity. And yet, with such an example teaching a sad and solemn lesson of the folly of introducing a pagan population into the midst of civilization, there are those who blindly insist upon the expediency of cursing our country's future as our own day has been cursed, and entailing upon our children just such evils and horrors as we have witnessed. The introduction extensively—and if once commenced who can say where it will stop—of Chinese, whether as citizens or as slaves, will prove the ruin of our land.

The Chinese question, like most others, has two sides, and we are willing that our readers shall see both. The subject is one of too much importance to be treated in a flippant or superficial way or with reference merely to temporary or local interests.

Immigrants for the South.

The Cincinnati *Chronicle* suggests that the South should look to Southern Europe and to the countries bordering on the Mediterranean Sea for the principal additions to its population. It says that we shall find there one hundred and twenty-five millions of people, of a migratory race, but who have no direct means of access to this country. During the last few years one hundred thousand French and quite three hundred thousand Italians have emigrated to South American countries, to say nothing of the thousands who have gone in the same direction from Spain, Portugal, Southern Germany and Austria. The people of all these countries are industrious and frugal; they live in a climate like that of our Southern States, and their agricultural pursuits are identical with those of the same section. The Italian crop of hemp and cotton last year was valued at twelve million dollars; the malarial districts of Piedmont and Lombardy produce rice in unlimited quantities. The Austrian is a producer of cereals and a breeder of cattle; and the Spanish and Portuguese have colonized in every tropical or semi-tropical country but ours, and are large producers of sugar and coffee. Now, does it seem unreasonable to anticipate that the South should hereafter receive a large share of immigration, from the quarters indicated, through the capacious ports of Norfolk, Port Royal and Brunswick? Undoubtedly, but one obstruction stands in the way, for the question of law and order is virtually settled. The only hindrance is the lack of direct and speedy means of communication.

Steam Plow.—The *Scientific Press* says a bill offering a premium for the invention of a successful steam plow has passed the Senate of California. The bill secures $5,000 to the inventor of such a plow. The Illinois Central Railroad Company has had a standing offer of $20,000 for such a plow for a number of years past.

THE RURAL CAROLINIAN.

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"*Progress with Prudence, Practice with Science.*"

D. H. JACQUES, EDITOR.

IMMIGRATION AND DIRECT TRADE.

The Industrial Convention, lately held in this city, initiated two important and timely movements, wisely linking them together, so that each shall help the other. These are Direct Trade with Europe and Immigration.

Direct trade, even without special arrangements to encourage it, favors immigration, and immigration, by increasing our population, production and consumption, will promote direct trade; so we were glad to see these subjects taken up in conjunction, and made, as it were, parts of one grand movement; and our hopes of both are greatly encouraged. A great deal has heretofore been said on both these subjects, and but little done; but they have been taken hold of separately and not in the right way. We trust that now both will be pushed forward together in the spirit in which they were discussed in the Convention.

A line of freight and immigrant steamships between Charleston and some important European port; low rates of railway transportation from this city to the interior, and to the West and Southwest; the establishment of immigration societies along the proposed line of immigrant travel; the formation of immigration societies in South Carolina for the establishment of immigrants upon *free farms*, with a Board of Immigration in Charleston to secure the accommodation and comfort of the immigrants on their arrival; and the preparation and publication of works showing the advantages of South Carolina as a place of settlement embrace the principal points in the plan of operations suggested and recommended by the Convention. This looks like business. Will the plan be carried out? Will the $800,000 be subscribed for the four steamers? Will the railway companies make liberal terms in the matter of transportation? Will active, wide-awake, practical men, all over the country, take hold of the matter and make the thing a *working* "success?" We shall see.

We have at least one practical proposition, and it comes from a source that will give it weight. During the session of the Convention, the Hon. Geo. A. Trenholm stated that the South Carolina Railroad Company was willing to bestow upon immigrants alternate sections of lands belonging to the Company, and that the Company would subscribe not exceeding $25,000 for establishing a reliable line of steamships between Charleston and a first-class European port.

This is to the point, and shows a business-like appreciation of the movement, as well as a laudable public spirit. The shrewd Directors of the Company know very well that such a donation of land as they propose will pay—that with industrious settlers established on alternate sections, the reserved lands will be worth more than the whole tract is now valued at, and that the business of the road will, at the same time, be largely increased. Cannot private landholders see the matter in the same light?

So far all is well; but the matter must not be allowed to rest. There is land to be offered, there is money to be subscribed, there is *work* to be done. Are we ready for these practical matters?

THE SISAL HEMP QUESTION.

Believing that the cultivation of Sisal Hemp, and the preparation and manufacture of its fibres are destined to become important branches of industry in the South, we are not sorry that a slight controversy in the

papers should attract public attention to the subject.

The confusion that has arisen in regard to the identity of the plant, seems to have grown out of these two circumstances: 1. That botanists formerly confounded not only the *Agave Sisalana*, but several other tropical species with the *Agave Americana*, so well known both in America and in Europe as the Century Plant; and, 2. That Dr. Perrine introduced into Florida several varieties of the *Agave Sisalana*, or perhaps distinct species of the *Agave* under the general name of Sisal Hemp. The variety figured by him, and copied by us in our March number, is the *Yashqui*, which he says yields the best quality of fibre, though the *Sacqui* affords the greatest quantity. The Pulque plant (*Agave Mexicana*) bears a closer resemblance to the Century Plant than the Sisal Hemp.

In saying that the Sisal Hemp is related to the Yucca, we had reference rather to its real nature and habits than to botanical classifications which place it in a different family. Our Bear Grass (*Yucca filamentosa*) has, it is well known, a very strong fibre.

In regard to the botanical character of Sisal Hemp, Dr. Perrine remarks:

"As botanical parrots still repeat that the *Agave Sisalana* of the subscriber is a mere variety of the *Agave Americana* of the books, he has great satisfaction in announcing to the Department that, by the flowering of a plant of the *Yashqui*, a kind of Henequin, in its fifteenth year, he has acquired the power of demonstrating, botanically, not merely that it is an entirely different species, but that its fructification affords characters which may be sufficient to form an entirely new genus"

PLEASE GIVE US CREDIT.

We are glad to know that our articles and those of our numerous excellent contributors are appreciated by our cotemporaries, and are more than willing that they should copy such of them as they deem peculiarly interesting or important; but we certainly think that we are not unreasonable in asking them to give us due credit. Please say where you get the articles or where they originally appeared. This, we are happy to say, is generally done, and we have no doubt but that, in most cases where no credit is given, the omission is accidental.

Our good friends of the *Reconstructed Farmer*—a good paper with a good name—have copied "Short Comings in Farming," by our correspondent "Snarl," without credit—an unintentional wrong we have no doubt. Several other papers have followed suit. "How to Get Immigrants" is also going the rounds, in some cases without credit to The Rural Carolinian.

THE FLORAL FAIR.

The floral exhibition of the Charleston County Agricultural and Horticultural Society, held here on the first week in May, though not an extensive one, was excellent in point of beauty and taste, and was successful to an encouraging degree; being well attended by the ladies and gentlemen of the city as well as by strangers. The address by Dr. Simms was a chaste and well-considered presentation of an appropriate subject—"The Sense of the Beautiful"—and was listened to by one of the most select and elegant audiences we have ever seen assembled on any similar occasion. There is hope for even our utilitarian age, when such an address can attract such a gathering of beauty and intelligence. We hope it will be published, and its influence be thus more widely extended.

THE SEASON AND CROPS.

Returns from various parts of the South show that the wet winter and first half of the spring have been followed by a severe drouth, little rain having fallen since the middle of April. The small grain crops have suffered severely in many localities.

The April returns of the National Department of Agriculture do not indicate as favorable a prospect for the wheat crop as last year.

In regard to cotton and corn, as well as the small grains, we hope, with the help of our correspondents, to make a full report next month.

Reply to "Georgia."—"Georgia," writing from Thomasville, Georgia, in The Rural Carolinian, for May, takes me to task for an inadvertence in one of my letters written in March from the above town, which I con-

fess was unintentional, and I hope not prejudicial. "Georgia" and I will not quarrel. I will merely refer him to "D. H. T.," on page five hundred and thirteen of THE RURAL CAROLINIAN for May. If that paragraph does not cause him to vent his spleen (if he be at all spleenetic,) upon "D. H. T," it most certainly will arouse his sympathy for Mr. Alexander, whose plantation will soon be a jungle, if the prolificacy of his freedmen continues. D. W. A.

BOTANICAL QUESTIONS.—In the elucidation of any botanical questions that may arise in our discussions, as well as in the naming of new or rare plants, we are happy to announce that we are promised the assistance, when needed, of that distinguished botanist, Mr. H. W. Ravenel, of Aiken, S. C., whom we have the honor to number among our contributors.

——Persons finding plants believed to be new, rare or valuable, the botanical names of which they cannot otherwise ascertain, are requested to send us specimens, with a mention of the common name, when known, and a statement of the situations in which they grow. It is desirable to send both the flower and fruit or seed-vessel, when practicable, but especially the flower.

——We shall be pleased to receive from all parts of the South specimens of valuable, rare, or curious seeds, plants, fruits, vegetables, and minerals that will serve to illustrate the productions and resources of our country.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Cotton on dry uplands should be cultivated on the level principle, avoiding the high, sharp ridges so generally seen. On flat low lands, especially if the season be wet and the land not well drained, it is necessary to throw up ridges to prevent water from settling about the roots. Keep the plows running briskly. See article on "Rust in Cotton" in this number, and articles on cotton culture in previous issues.

Corn must be kept clean, and the surface of the ground well pulverized. Let the cultivation now be shallow, and the ground be kept level, except where, as on wet low lands, ridging or hilling is absolutely necessary.

Sweet Potatoes must not be neglected. Continue to plant your slips or draws. Take advantage of a rainy day for planting if you can, but plant whether it rain or not. We have planted in the midst of the severest drouth with the loss of very few plants. Grout and water the plants as directed in the article on "The Sweet Potato, and How to Plant It," in April number.

GARDEN WORK.

June is generally a hot dry month, and comparatively little planting can be done with advantage, unless extra care be given to it. Re-sowing, (where seeds or plants have failed,) hoeing and mulching are the principal operations of the month.

Cabbages, even if sown last month for the fall crop, may be sown again this month, and may give better plants; but the ground must be shaded and the bed frequently watered till the plants have come up and made considerable growth.

Cauliflowers and Broccoli should have been sown last month, but if neglected try them now, shading and watering.

Beets and Carrots may still be tried. If you can get a stand, they will come in well in the fall.

Snap Beans.—Continue to plant once in ten days, if you desire a succession. The tender pods make good pickles. Lima and Sieva beans may still be planted.

Green Corn is desired during the whole season. Flint corn is better to plant now than sugar corn.

Okra may be planted for a late crop.

Tomatoes should be tied up to stakes or trellises, and the ground around them well mulched. Sow more seed for a late crop.

Onions will be fit to pull from the middle to the last of the month. Take them up in a dry day, and spread them on a floor in a dry airy place.

Celery.—See article in this number.

THE FLOWER GARDEN.

There is little to be done in this department, except to water plants, trim off unsightly branches, and keep the beds clear from weeds.

RURAL NOTES AND QUERIES.

TANYAH AND CASSAVA.—I notice that THE RURAL CAROLINIAN has an eye to the interests of Florida in the frequent articles upon semi-tropical fruits and plants. I have read these with much pleasure, and hope they will assist in increasing the circulation of this excellent paper throughout Florida, and in adding to its columns other articles of interest pertaining to Florida products. I find that the cassava and the tanyah are sometimes cultivated in gardens. They grow to perfection in this State. Could not some one who has had experience give us an article on their culture? also the best modes of preparing them for the table?

Perhaps some of our Louisiana friends could enlighten us upon this subject. I have some of both growing, but am not sure I cultivate them properly. W. N. HART.

Federal Point, Fla., May 6th, 1870.

MEXICAN EVERBEARING STRAWBERRY. P. P. We have the so-called Mexican Everbearing Strawberry growing in our garden, side by side with the Monthly Red Alpine, and have been able to detect no difference between the two. Both have blossomed and borne fruit, both have put out runners and furnished us with numerous new plants, and both are apparently equally worthless—except as curiosities.

SISAL HEMP.—I send you herewith some seed from the Sisal Hemp, which, if buried one inch in the ground, will grow rapidly. I thought some of the readers of THE RURAL CAROLINIAN might want plants, and to such I will furnish seeds with pleasure to the extent of two hundred. GEO. J. ALDEN.

New Smyrna, Fla.

Our seeds were planted according to directions, but failed to germinate. Possibly they were destroyed by moles. Will our correspondent send us a few more, or, if practicable, a young plant?

PICKLES.—Will some of the many readers of THE RURAL CAROLINIAN inform me the manner of preparing the pickles usually sold in the grocery stores. There is a pleasantness of taste, as well as color and crispness, that I have never seen or tasted among the great number prepared for private use at home. Does not salt make the skin tough and shrivel up? G.

GERANIUMS IN THE PARLOR.—Lady Subscriber. Either "The Parlor Gardener," or "Flowers for the Parlor and Garden," both published by J. E. Tilton & Co., Boston, will give you the desired information, with much more that will prove equally useful; but in the treatment of house-plants you will have to learn much by experience, whatever books you may read. Just how to graduate warmth, moisture, and sunshine, to the wants of each, must be learned by practice. The best soil for growing geraniums in the house consists of two parts light loam, one part well rotted cow dung, and one-half part each of fibrous peat and charcoal, with a slight mixture of silver sand. Leaf mould will do in place of the peat.

SILK SPIDERS.—I send you three cocoons of silk spiders, with young spiders, for your inspection, thinking you would like to draw the attention of the curious to the useful, to some good purposes. They may open a new source of industry. The spider is large when full grown. One spider will, when at liberty, spin more silk than twenty silk-worms.

Columbia, S. C. J. P. FINLEY.

The young spiders (counting hundreds in each cocoon) reached us in good condition, and we shall endeavor to set them to work.

DORKING FOWLS.—H. C. It is quite likely you have failed to get the pure breed. The fact is, there is comparatively little absolutely pure bred stock in the country, and fowls are more badly mixed than anything else. It is by no means safe to buy eggs for hatching of anybody who may choose to advertise pure bred fowls of any particular breed. In buying hogs and cattle there is a similar danger.

JAPAN PLUM.—I have had the Japan plum growing here for ten years. It flowers, but invariably gets killed. I have never, though I have tried several ways to protect the shrub, succeeded in maturing fruit. A. J.

Richmond Factory, Ga

SALT FOR CABBAGES.—A pinch of salt sprinkled on cabbage plants a few days after they are set out, and while the dew is on, will give them a healthier growth, and help to protect them against insects. About the time they are beginning to head, the operation may be repeated with advantage.

HULLING COTTON SEED.—Within the last few days I have learned how to hull cotton seed without being at the expense of buying a machine, and thinking it may be of benefit to some of your subscribers, I will give you the *modus operandi*. Remove the rim from a common horse-mill, raise the runner (rock) sufficiently to prevent mashing, and apply the seed as you do corn.

The floor around the mill should be swept clean, as the hulls and seed will be thrown all around it. If it is desired to separate them, it can be done by common wheat fans. They also can be crushed or hulled on Scott's Little Giant, or the Young America corn and cob crusher. SCOOBA.

BLADDER FRUIT.—F. M. We have often observed hollow pod-like abortions, similar to those you send, in the place of natural fruit, on unhealthy plum and cherry trees, and have attributed the phenomenon to a deteriorated condition of the sap. We intended to subject your specimens to a careful microscopic examination, but before we could do so they became too dry and shrivelled.

HEDGES. — One of your correspondents wishes to be informed on the hedge subject. I would advise him to consult Payton Graves, of this (Lowndes) county, on the subject, who has, as I am creditably informed, an impenetrable fence to either hogs, cows or horses, of the cactus, now from three to five years old.
Litohachee, Ala. D. S. H.

THE CHINA FLAT PEACH.—This is a curious and little known variety, lately introduced into France, and described in the *Revue Horticole.* It is not unlikely that it would do well here in the South. One of its singular characteristics is that it has a five-angled opening resembling the calyx of the apple.

IRISH POTATOES.—A subscriber in the May number of THE RURAL, details his mode of keeping Irish potatoes. I would state that sand is not necessary. His plan of putting the picked potatoes in a cool place under his house is a good one; when the frost of winter appears, pack in boxes or barrels, and in very cold weather throw over the boxes some covering of straw. It is almost impossible to get dry sand, or prevent it from absorbing moisture from the atmosphere. G.

SULPHUR AND ASHES.—A correspondent says that "a mixture of sulphur and ashes should be sprinkled in hens' nests when setting, as their heat generates lice. Hens should have a shallow box of ashes to wallow in at any time. It will keep them free of lice; but when found to be lousy, a little whale oil rubbed under their wings, and on their heads, with a sprinkling of pulverized sulphur, will cause the vermin to disappear."

AQUARIA.—Ellen M. There are various water-proof cements that may be used in making an aquarium. The following is good: Take equal parts of fine white sand, finely pulverized litharge, and plaster of paris, such as is used for statuary, casts, etc. To this add one-third part of finely powdered resin, and then mix the whole very thoroughly together. Make into a putty with good boiled linseed oil and use immediately. It may be applied with a putty knife, and after a few days will harden and adhere to the glass so firmly that there is no danger of its allowing water to pass through.

SWEET POTATO VINES.—Will you or some of your contributors tell me if it is better to cover the vines of sweet potatoes the first working, or if at all, and oblige R. A. C.

We advise to carefully avoid covering them at all.

YELLOW CLOVER.—Enclosed I send what I think something new—a variety of yellow clover—which is now in full bloom carpeting our prairies. The *Lespedeza Striata* grows by its side, and is now two or three inches in height—retarded somewhat by the dry weather—but does not bloom till August or September. My horse eat voraciously of the specimen I send while I was examining it. What is it? D. S. H.
Litohachee, Ala., May 9th, 1870.

The plant referred to is Yellow Clover (*Trifolium Procumbens, Lin.*) introduced, but widely disseminated. Please send us a few of the seeds, for we are not sure that there is any of it in our neighborhood.

MOLES.—I had this spring two nursery beds in my vegetable garden, of equal size, and manured alike; from one, the moles were kept, by boards placed around it on edge, partially buried; on this one, the seeds all, or nearly all, came up and did well. On the other bed, were planted seeds from the same papers; the moles ran their furrows through the bed, and, as a result, not more than half the seeds came up; those that did, grew well until they were two or three inches high, when the moles made another raid and completely plowed up the bed. Every plant that was disturbed by the moles, and their name was legion, was stone dead before the sun was six hours high. I pulled up several and the roots were not eaten.
P. R. FLANKS.
Beaufort County, S. C., April 25th, 1870.

LIQUID MANURE.—MRS. W. E. C. An excellent liquid manure for your house plants may be made by dissolving two ounces of carbonate of ammonia (common smelling salts) in a pint of water, and then dropping in sulphuric acid (oil of vitriol) until all effervescence or bubbling ceases. A table-

spoonful of the solution of sulphate of ammonia, mixed with one gallon of warm water, is another most efficacious liquid manure, and not at all disagreeable to use in any parlor or chamber. It should be applied, at first, once a week, then every four or five days.

Spotted Medick.—The clover-like plant alluded to by our correspondent, "Plaquemine," a specimen of which he was kind enough to send, is the Spotted Medick (*Medicago Maculata, Willd.*) sometimes called California Clover. It has been represented as an excellent pasture plant, but we have no experience with it. We should be glad to have a few seeds of it.

Good for the Wilson.—About the first of February last I purchased of Mr. J. Lilly, of Salem, Russell county, Alabama, four hundred plants of the "Wilson Albany Strawberry." Planted them in my garden, and on the first and sixth of May, gathered, on each day, a little over two gallons. I don't know much about the plant, but it seems to be an extraordinary yield so early after planting. The plants are now very full of green berries. F. M. Wood.

OUR RURAL EXCHANGES.

We gladly welcome to our sanctum every paper and magazine honestly devoted to agriculture, horticulture, mechanics, and the arts and sciences connected therewith, and would with pleasure give each an extended notice if our space would permit; but, fortunately for the country, they are far too numerous to be all thus set before our readers at one time. We have heretofore named some of them, and will now notice a few others, intending no slight to equally deserving ones that may remain for the present unmentioned. Their turn will come.

——The oldest on our list, and the first established of all the agricultural papers of the United States, is the *American Farmer*, published in Baltimore, Md., by Frank Lewis, Esq., and edited with great industry and ability by Professor N. B. Worthington. It shows a degree of vitality and vigor equal to that of its younger competitors, and, like good wine, seems to improve with age.

——*The Southern Cultivator* has already been noticed, and is too well known, widely read and generally appreciated, to need even this mention. Its success speaks well for the farmers of Georgia and the South, and should encourage younger and more humble coworkers like ourselves. Published by W. & W. S. Jones, Athens, Ga.

——*The Southern Planter and Farmer*, (Richmond, Va., C. B. Williams, editor and publisher,) is an old and excellent monthly, and ably represents and effectually promotes the agricultural interests of the Old Dominion.

——*The Reconstructed Farmer* seems to have been reconstructed on an excellent basis, and to be striving with zeal and good judgment to reconstruct the agriculture of the "Old North State." Published and edited by Thigpen & Dancy, Tarboro,' N. C.

——The old *New England Farmer*, as truly an established Yankee institution as Plymouth Rock, (being now in its forty-eighth volume,) needs no words of commendation from us. Thank you, friends, ("better late than never,") for your kind notice of our humble beginning. R. P. Eaton & Co., (Boston, Mass.,) publishers.

——*Tilton's Journal of Horticulture* is the handsome and able representative of New England Horticulture. It is noted for the beauty of its illustrations and the interest and value of its "Notes and Gleanings."

——From St. Louis, Mo., we receive *The Journal of Agriculture*, a weekly paper of which we like much both the matter and the style. L. D. Morse and Wm. Porter, editors. R. P. Studley & Co., publishers.

——*The Ohio Farmer* is another weekly journal, doing excellent service in the great western fields. S. D. Harris and G. E. Blakelee, editors, Cleveland, O.

——*The Plantation*, a weekly agricultural journal, published at Atlanta, Ga., and edited with ability, taste and tact, by T. C. Howard and R. A. Allston. An interesting and useful publication, and, we trust, will prove a successful one.

——*The Southern Farmer*, published at Memphis, Tenn., by M. W. Phillips & Co., is one of the best of our agricultural exchanges. Dr. Phillips, the editor, is too well known in the agricultural world to need our endorsement. He always makes a good paper.

——*The Gardeners' Monthly* is an old favorite with professional gardeners and amateur horticulturists. Its editor, Thomas Meehan, is one of the most thoroughly informed writers on horticulture in the United States. Philadelphia, Brinkloe & Marot, publishers.

——*The American Stock Journal*, published by N. P. Boyer & Co., Parkesburg, Chester Co., Pa., is the highest authority we have in its specialty, and a most useful magazine.

——*The Southern Horticulturist*, published and edited by H. A. Swasey, M. D., at Yazoo City, Miss., is the only strictly and exclusively horticultural journal, so far as we know, in the South. The editor is a well-known experienced pomologist and writes well. We are glad to welcome the *Horticulturist* to our sanctum, and wish it the success it so well deserves.

——*The Southern Farm and Home*, (J. W. Burke & Co., Macon, Ga.,) is a new and handsome monthly, which promises to do good service in the broad fields of Southern agriculture. It is well edited, and always readable and useful. Its mechanical execution does credit to its enterprising publishers.

——*The American Entomologist and Botanist* is one of the most useful publications on our list, teaching us how to distinguish our friends from our enemies in the animal and vegetable kingdoms, and how to protect the one and defend ourselves against the other. R. P. Studley & Co., St. Louis, Mo.

——*The Household*, (G. E. Crowell, Brattleboro', Vermont,) is an especial favorite among the ladies, and is invaluable to the housekeeper. It seems to just fill a niche, otherwise vacant, and to be exactly the right thing in the right place.

RURAL LITERATURE.

——Edward Sprague Rand, Jr., author of "Flowers for the Parlor and Garden," "Garden Flowers," "Bulbs," etc., is one of our best floricultural writers, and his latest work, "Seventy-five Flowers," is not inferior to anything of the kind in print, in point of practical value. His seventy-five flowers are well chosen, his descriptions correct and interesting, and his directions for cultivation clear and concise. J. E. Tilton & Co., Boston, publishers.

——J. E. Tilton & Co. have also lately issued "The Strawberry and its Culture," by J. M. Merrick, Jr., who is making the strawberry a specialty, and has tested most of the new varieties (no small matter in these days) with more care than most of us have been able to give them. As a manual of strawberry culture, it is valuable as embodying actual experience, and the catalogue of known varieties is full and trustworthy. We are particularly pleased with the chapter on the production of new varieties.

——D. Appleton & Co. publish "The First Book of Botany, designed to cultivate the observing powers of children." The author is Miss Eliza A. Youmans, sister of Professor E. L. Youmans, well known in the scientific world, who has assisted her in some parts of the work.

——*The Southern Cultivator Receipt Book*, is the title of a very useful compilation by C. D. Camp, of Athens, Ga., who may be addressed as above.

SCIENTIFIC NOTES.

—— Mr. C. F. Panknin, an accomplished practical chemist of this city, has discovered a process for the manufacture of a writing ink which is not liable to be affected by the action of any acid or other chemical. The importance of such an ink in the preparation of checks, notes and other legal papers, will be obvious to all. Messrs. Walker, Evans & Cogswell have become the proprietors of this important invention.

——*Hearth and Home* says that at the stations on the line of the Pacific Railroad, on the vast treeless plains, wherever the people attached to the stations fence in and plough up the grass sod in order to grow vegetables or grain, large numbers of young trees spring up, principally oak, of which none are to be found within hundreds of miles. Whence do they come?

——A great many experiments have been made with solutions of carbolic acid of vary-

ing strength, in order to find how much plants can bear in attempts to rid them of their insect parasites. Solutions of carbolic acid in water, of the strength of one thousandth part, or about one drachm (or one teaspoonful) of pure acid to the gallon, may be safely applied to all parts of most plants, the flowers excepted. This may be done by means of a common watering-pot, or what is still better, a syringe with a rose jet.

——"Before washing any colored fabrics," the *Scientific American* says, "it is recommended to soak them for some time in water, to every gallon of which is added a spoonful of ox-gall. A tea cup of lye in a pail of water is said to improve the color of black goods when it is necessary to wash them. A strong, clean tea of common hay will preserve the color of French linens. Vinegar in the rinsing water for pink or green, will brighten those colors, and soda answers the same end for both purple and blue."

——The sprouting of seeds can be facilitated by chemical agencies, especially by the action of ammonia and oxallic acid. A solution of the latter will often cause them to germinate within a day or two, even after having been kept for forty years.

——The Boston *Journal of Chemistry* gives an analysis of a specimen of manure taken from a water-soaked heap, and another from a parcel preserved in a barn cellar, by which it is shown that in the nitrogen (ammonia-forming constituent,) the soluble organic and inorganic bodies, and potash and soda salts, there is a loss in the exposed manure, which renders it of less than half the money value of the other; a fact of which our farmers may profitably make a note.

INDUSTRIAL ITEMS.

——*The Sacramento Reporter* speaks very hopefully of Herr Schnell's Japanese colony at Placerville, El Dorado County, Cal. About 110 acres have been laid out with over 200,000 tea plants or nuts, (as they are more correctly termed,) which look finely and give promise of a bounteous crop of savory teas. The Japanese, a race infinitely superior to the Chinese, are excellent agriculturists, and all the work on this plantation is done on purely scientific principles.

——*The Boston Journal of Chemistry* says: For more than twelve years past the Dutch have been making efforts to naturalize the cinchona-tree in Java, and the prospects of final success are quite favorable. Nearly a million plants are under cultivation in nurseries and regular plantations. About as many more have been planted in the jungles; but, owing to a variety of causes, these have mostly died.

——*The American Grocer* says, that during the past season the shipments of fruits and vegetables from Norfolk to New York, comprised the following kinds and quotations and value, viz.: 1,000,000 baskets strawberries, 50,000 bbls. potatoes, 40,000 bbls. peas, 20,000 bbls. cucumbers, 5,000 bbls. squashes, 2,000 bbls. beets, 100,000 boxes tomatoes, 40,000 bunches radishes, 650,000 heads cabbages, 150,000 melons. The estimated value of the articles above enumerated was $1,045,200. Value of asparagus, turnips, apples, pears, plums, cherries, etc., $41,000. Total value for the season, $1,084,200.

——Mr. Le Franc has received a patent for his ramie machine. General Capron and other experts have taken a great interest in it. The general opinion is that it meets the necessities of the case.

——Among the patents issued by the United States Patent Office, for the week ending May 3d, is one to Mr. J. M. Eason, of this city, for a "Stump Extractor"—a full description of which was published in THE RURAL CAROLINIAN last winter. We understand that the manufacture of the machine will be commenced in time to supply the demand for the fall and winter operations of the farmer.

——*The Utica Herald* gives the names of 143 new cheese factories going into operation in New York, this spring.

MERE MENTION.

——Mr. W. R. Bunnel, of Bridgeport, Conn., believes that he has, after a long course of experiment, discovered a sure and practicable remedy for the curculio. We sincerely hope it will prove so.

——A Minnesotian travelling in California recently, predicts a short crop of wheat in

that State this year. He says the only crops that give promise of a full yield, are those which are on summer fallowed lands.

—— A preparation is now used in England, on what are called "safety envelopes," which is made from the thick, tough sap found in large quantities in the leaves of the New Zealand flax.

—— A large grower of tomatoes near New York says that he has repeatedly gathered 1,000 bushels from a single acre, but that from 600 to 700 bushels is as much as can be counted upon with ordinary treatment.

—— Strawberries furnish a pleasant and effective dentrifice. The juice dissolves tartarous incrustations on the teeth, and gives sweetness to the breath.

—— The raising of mushrooms is found to be quite lucrative by the gardeners of Boston; they sell readily at a dollar a dozen.

—— We are indebted to G. W. A. Steadman, of East Feliciana Parish, La., for seed of Steadman's Improved Prolific Cotton, which he thinks superior to any variety he has even seen. We have it on trial.

—— The *Victoria Advocate* (Texas) mentions the fact that one merchant in that State paid out $5,000 for pecan nuts in less than one week. The average price is three dollars in specie per bushel.

—— Large quantities of olives are produced in Los Angelos, California, and its vicinity.

—— Dr. Randall says that he does not believe that the American Merino can be improved by any cross whatever, for the greatest production of medium fine wool.

—— There were gathered last season forty-one hundred tons of Sumac in Virginia. It brought $82,000.

—— There are ten thousand lemon trees in California, and the fruit sells at from forty to fifty dollars a thousand.

—— There is an immense pigeon roost near Houston, Texas County. It is said that a party from that place killed 1,600 in one night.

—— We are indebted to W. T. Grigby, Renton, Tenn., for seeds of the "Apple Cucumber."

Correspondence.

MORE ABOUT RAMIE ROOTS.

Editor of The Rural Carolinian:

I have carefully perused the letter of your correspondent, G. H., under the caption "Ramie Again," in your April number. I surely do not think my February article severe upon H, (it was versus ramie, not versus your correspondent,) nor do I think myself "behind a stump" in that article any more than most correspondents, who have higher motives in writing than to advertise their wares or roots. Had it been my purpose to dispose of a few thousand roots, or as many bushels of cotton seed, I should have done as Mr. H. did in his first letter, signed my full name and postoffice address, so that all who read might know just where to write and buy. With a view only, however, of warning your readers against what, from my humble experience and opinion, I believe so far, at least, to be a very pernicious and dangerous plant to experiment with, I signed—with your kind permission, Mr. Editor, shall continue to sign—my articles modestly with my initial letter. My full address came into your possession with my first letter, and is to be obtained by Mr. H. whenever he may ask for it. As far as possible I desire to avoid all personal allusions. My purpose is higher. I have already stated it.

An unavoidable deduction, however, from Mr H.'s communications, is that *he* has come to the conclusion that he can make more money selling roots than selling fibre, and in that conclusion I bear tribute to his good judgment. I am also willing to admit that he has arrived at that conclusion after "cautiously and perseveringly studying the ramie." He says he is "now sure that it is a good and profitable thing," and magnanimously adds that he "will sell one million of plants this season" if he can find buyers. Now let us see how "good and profitable a thing" this arrangement will make it for Mr. H. I do not know his price for them; he does not state it in his letter. I paid one dollar apiece for Mr. Roezl's. Suppose Mr. H. sells for twenty cents each, that million will bring him $200,000! a real "good and profitable thing." It is not so easy a thing to make $200,000 from ramie fibre. Mr. H.'s ideas are sound and practical, he goes at the *root* of the matter!

He says he can plow it out as easily as break a grass sod, when he wants his land for something else. Coco grass and Bermuda sod break easily, but will they stay broken? And of these grasses it is also safe to say "after the first or second year weeds will not be much trouble," as Mr. H. says of his ramie in its praise.

Now in regard to that "small lot sent this summer to England." I have inquired of Mr. Lefranc, but I cannot find who shipped it, or raised it, or how much there was, or what was received for it per pound, or if there was as much as a pound in it. I have before me a very kind and gentlemanly letter, in which he states that the fibre is worth £60 per ton in England, but that there is yet no means of cleaning the fibre in this country, and no market for it. None has yet been sold here. Now, after it is cleaned, if it can be cleaned, it appears that it will bring from thirteen cents to fourteen cents per pound—2,240 pounds for £60, say $300. Broom-corn sells in this market (and the demand has never yet been supplied) for from fifteen cents to seventeen cents per pound, and no deductions for foreign freights and charges.

So even *if* ramie is not a pernicious and dangerous plant, (I maintain and fully believe it is,) and *if* it will grow and produce fibre, and *if* the fibre can be cleaned by machinery, and *if* that machinery does not prove to be complex, expensive and imperfect, and *if* England will buy at £60 per ton, even then the culture of ramie fibre is very doubtfully profitable.

I believe in "progress," and I farther believe that many farmers, who would otherwise succeed and prosper, are distracted into bankruptcy by "will o' the wisp" experiments. They are too often lead, by flaming and attractive advertisements, to spend dollars for fancy and unsuccessful valueless roots and seeds, and then thousands of dollars are lost in *trying* them, while the root and seed-seller does well. There is danger in being *too* experimental. In my opinion, in practical labor-saving implements; in judicious improvements in cultivation; in careful selection of seed; in liberal use of the best fertilizers; in careful breeding of stock and poultry; in good and scientific horticulture, and not in ramie experiments is the "progress" which our farmers need to become substantially prosperous and successful.

New Orleans, La. R.

PLASTER.

Editor of The Rural Carolinian:

Undoubtedly the great desideratum among Southern planters at present is the ability to profitably utilize the funds nature has deposited to their credit. For instance, in my neighborhood, where there is every variety of soil, black, red and mulatto lime soil, white and black sandy soil, and a sufficiency of fertility in each and all, we have, in addition, an abundance of plaster to warrant my saying it is in an inexhaustible supply; but we make little or no use of it, simply because we do not know how to utilize it. This supply is sufficiently fine to produce a beautiful finish upon lime-plastered walls, but I am more particularly anxious to know its agricultural value and advantages.

Will you not yourself, or can you not induce Prof. Shepard, or Dr. D. Lee, or some other scientific reader of THE RURAL to give us immediately an article on plaster, enumerating its uses, its value, its effect, how to apply it, when, or how much to apply, etc?

SOUTH WEST ARKANSAS.

THE USES OF JUTE.

Editor of The Rural Carolinian:

A few words may be of interest regarding the new staple, jute, which the Commissioner of Agriculture is desirous of introducing into the South, for which end he will distribute the seed gratuitously upon application.

In the report of the State Department for 1868 will be found an interesting article upon jute, and its manufacture, and thence we have obtained much of our information.

The plant is of the *cochorus* order, nearly allied to hemp, and has been hitherto grown almost entirely in India, where it is cultivated on a large scale; and last year the crop amounted to about three hundred thousand tons, valued at about $35,000,000. Of this crop, sixty-five thousand tons were exported to Great Britain alone; a large amount was exported to the United States; and the balance manufactured into gunny cloth, where grown, for the covering of the India cotton crop, and exportation to this country as cloth for our cotton.

Besides its great value, as the only material which can be used profitably as covering for cotton bales, it is of still more extensive use now, in the shape of cheap sacking, ropes, rugs and carpetings. Dundee is the place where its manufacture is carried on to the greatest extent; and there are many large mills there which use nothing but jute, in the place of hemp. It is one of the most easily dyed fibres known, and the colors taken are bright and beautiful; but, as the fibre is closer than flax or hemp, the dyeing process has to be somewhat complex, to make the coloring materials thoroughly penetrate the fibre or fabric. The very sightly nature of jute, the regular, even thread made from it, and the smooth, tidy appearance of the cloth, combined with its great cheapness, have served to recommend it to consumers, and to bring it into more general use year by year.

The South can raise enough jute to supply the wants of this country and Europe: and as it can be laid down from our section in Dundee and New York, cheaper than from India, and probably better prepared, it would not be many years, after our planters had taken hold of this staple, before we should be the great rival of India in it, as we are now in cotton. The seed should be planted about the same time as corn, in moist land, if possible, and the plants will flower about the first of August. The tops should be then cut off, leaving enough perfect plants for seed, and about a month later, the entire plants should be cut to the ground, from fifty to one hundred put together in a bundle and steeped in fresh water for about a week, when the bark will slip off; they are then treated in the same manner as hemp, and made ready for market. Diversity in agriculture is needful for the South, and our planters should do all in their power to

give this new staple a fair trial. It is an article in large demand, and will have a ready sale at our own ports. W. S. K.

A REMARKABLE HAIL STORM.

Editor of The Rural Carolinian:

The greater portion of upper South Carolina is now (May 17) suffering from a protracted drouth. On the 9th of April an uncommonly heavy rain fell in many places, accompanied with much hail. No rain since. In Laurens county a very heavy hail storm destroyed totally the small grain crops in many places on the 5th inst.

This reminds me of a hail storm that once occurred in Fairfield county, on what is known as the Horse Branch country. On the 30th of May, 1839, hail fell in such quantities, and with such force, as to totally destroy every vestage of the crops of both corn and cotton, though the cotton was from twelve to fifteen inches high; corn, in many places, waist high. During the first three days of June the crops were replanted; and one plantation, of one hundred and seventy-five acres of cotton, yielded ninety-four bales, averaging three hundred and fifty pounds.

Between two hills of oak and hickory timber, in a narrow ravine, the hail stones varied in depth from five to twenty feet, for a distance of three hundred yards. From this deposit ice was daily carried to the town of Winnsboro', eight miles off, until the fourth of the following July, when quite enough was furnished to supply the wants of the patriotic of those days, for you must remember the fourth of July at that time was a gala day for old and young. This storm was confined to an area of about one and a half miles wide, and was represented to be as thick as a snow storm. Hundreds of persons from the surrounding country visited those plantations the next day; and many of them, now living, can testify to the truthfulness of this report. X.

EVERGREEN GRASS.

Editor of The Rural Carolinian:

Your letter of 25th March has been received.

As regards the "Evergreen grass," of which you ask for information *botanically*, I would here say briefly in reply that it is the *Arrhenatherum avenaceum*. The old Linnæan name was *Avena elatior* or Tall Oat grass. In its botanical affinities it is closely allied to the common oat of which it is only a peculiar modification. It is of European origin, but in our genial climate it has become completely naturalized, and is now found scattered along the slopes of the Alleghanies from Pennsylvania to the upper part of Georgia.

The "Randall grass" is also beginning to attract considerable attention in Western Virginia. I have just written to a friend in that State to send me a specimen for botanical examination. Common names are so vague and indefinite generally that little reliance can be placed upon them. When this specimen is received, I will be enabled to write a more satisfactory and complete article on the grasses best adapted to Southern cultivation.

Wishing you success in your laudable and useful enterprise, I remain yours, respectfully,

C. L. HUNTER.

Cottage Home, Lincoln County, N. C.

DRAINING—QUERIES.

Editor of The Rural Carolinian:

I see in the March number of THE RURAL CAROLINIAN, that Mr. J. M. Crawford, of Richland, S. C., drained an upland pond by opening ditches two by three and a half feet, throwing in stones and brick bats, covering with straw and then throwing back the earth. He did not state whether he had an open ditch to carry off the water, and these covered ditches as laterals. I, together with others, am anxious for further details on this *very* important subject, as I have more than one upland basin, and wish to know if these *blind* ditches will dry them without an open centre ditch. I have also, as is the case with many neighbors, several wet *springy* places, some on hill sides, some in flats. These places, except in very dry years, are uncultivatable. Now, as this drainage subject is of such importance, cannot Mr. Crawford, or yourself, or some one experienced give us details? Tell when to make open ditches; when covered ones; distance apart; best material for filling, etc. We have about here vast quantities of small rock, and if Mr. Crawford's plan of filling with small stones and covering is practicable and *permanent*, we have the material at hand for reclaiming many acres of our best lands now useless for the want of proper drainage. Do, Mr. Editor, give us all the light you can on this important subject; also, may those experienced give us the benefit of their knowledge *in detail*.

J. J. MCDANIEL.

Lots, S. C.

THE APPLICATION OF MANURES.

Editor of The Rural Carolinian:

Permit me to suggest what I deem an error generally committed in the application of all manures. Manures, to benefit any crop, must enter into solution. This solution descends into the earth. If so, it should be appliedas near the surface as possible. I have been farming since 1830, and have tried stable and other domestic manures, in various ways, ever since.

My experience is, it does best upon the corn, after being covered; and with the cotton seed when planted. Cotton has but few and small roots to feed from, and the manure should be so applied as to give it an early and vigorous start. In cold, wet, chilly weather, it preserves the plant from sore shins. I saw almost every field of cotton, in Maybinton township last fall, where the different fertilizers were used, and in many farms it was scarcely perceptible, being put so deep the plant did not reach it. I saw none equal mine, where the same quantity was used.

It is absurd to say any solution will rise. Medicines are filtered through paper, but the properties pass through below; and were it filtered through earth it would pass on down. I am no chemist, but experience will teach us ignorant farmers lessons that we know but cannot explain.

I never haul out my manure in the winter, a great deal of it passes off in solution. I try to get it off in as dry a state as possible, and apply it so.

How is it, cotton seed dropped upon corn will feed it as quick, and it will grow off as rapidly as when in the ground, the seed being upon the land not covered? May not the oil undergo some chemical change? The hull has not rotted.

Fairfield County. WM. H. RUFF.

RESOURCES OF FLORIDA.

Editor of The Rural Carolinian:

The agricultural resources of the State of Florida, if properly developed, are almost unbounded. What we most need here are capital and labor. Without these the resources of no country can ever be developed to any ex ent. We have pine lands in this county which will make from fifteen to twenty bushels of corn to the acre, and a five hundred pound bale of short cotton to every two acres, without the aid of one particle of manure. Then we have hammock land that will make forty bushels of corn and a bale of cotton to the acre; but the cit zens of this State, as a general thing, have been hunters and stock ra sers, and have devoted very little of their time to agricultural pursuits, except in a few localities. But since the late war ended, and the prices of provisions have ran so high, hundreds have been forced to turn their attention to farming in order to raise the necessaries of life at home, which I am truly glad to see. I prize THE RURAL CAROLINIAN very highly, and would not be without it for five times the subscription price, and hope soon to swell your list with a few more names. B. D. HARRELL.

Ellaville, Fla.

ASPARAGUS.

Editor of The Rural Carolinian:

Your remarks in the May number of THE RURAL CAROLINIAN upon "Asparagus and its Culture," were practically applicable only to those who are advised to grow it for private use. There are some persons in the South who grow this delicious vegetable for the Northern market, and who cultivate an area too great to be possibly manured as you direct. Will not some of these market-garden men give us their method of cultivating it?

Mr. S. J. Gustin, of Macon, Georgia, I am told, has several acres in asparagus, and this spring, for weeks at a time, shipped daily to New York from fifty to one hundred dollars worth of this vegetable. With him its culture is a remunerative success; and if he would publish his method of culture, previous preparation of the soil, and his success, it would be appreciated by the thousands who read THE RURAL CAROLINIAN. B.

CASTRATION OF FEMALE ANIMALS.

Editor of The Rural Carolinian:

Will you, or some of your contributors, give us an article on the subject of female castration, *i. e.* spaying. Castration of the male animal is generally very well understood; that of the female not so well. There are several questions I should like to ask:

Can a sow, or any other female animal, be spayed successfully after she has been impregnated by the male; and can she bring forth the fruits of that impregnation, and thenceforth be incapable of breeding purposes? Should she be spayed from the side, or thrown on the back and spayed from the abdomen? Does this abstraction of the ovaries of the sow, cow, etc., really improve the flesh? Is it too late in the season now for such operations? Is it all bosh about the moon's having anything to do with it, or following the signs of the zodiac? Also, what is the object of taking out the oviduct of a hen, and thus caponing her?

These are farm and domestic questions, Mr. Editor, lying in the province of your magazine, which I should like to see answered. Perhaps "J. T. G.," of Muscogee county, Georgia, or W. M. Shuler, who seems to have had some experience in such surgical operations, can give us some information on the above points; if so, we shall feel obliged for the same. M. M. L

Columbia, S C.

COLIC IN THE HORSE.

Editor of The Rural Carolinian:

On page five hundred and twenty-two of the May number of your work I find a remedy (no doubt good) for colic in the horse, occasioned by over feeding and drinking, whilst in a heated condition. Allow me to add another, equally efficacious, which I have administered in several cases among the horses and mules on my plantation, even when it was considered that the animals were *in extremis*. The following is infallible:

Two or three table-spoonsful of sulphate of lime, (which may be procured from any druggist) put into a bottle to be filled with water, well shaken and poured down the throat of the suffering animal. In the course of fifteen or twenty minutes he will be "himself again." If the animal be lying down so much more convenient will it be for drenching; for in that state the head may be more readily raised, the tongue gently drawn out, the dose administered, and the tongue immediately allowed to resume its natural position. The dose may be repeated, if per chance the first, or a great part, be wasted in the administration.

New Orleans, La., May 10, 1870. SUBSCRIBER.

METEOROLOGICAL RECORD—APRIL, 1870.

Thermometer:

	Max.		*Min.*	*Range.*	*Mean.*
25th.	83	18th.	37	46	62.93

Barometer:

26th.	30.32	31 & 10th.	29.71	61	29.99

Hygrometer:

Difference between the dry and wet thermometer.

	Varying Between.	*The Mean.*
Sunrise	8 and 2	4.13
2 P. M.	19 and 5	10.90
9 P. M.	10 and 1	5.93

The Dew Point:

		Max.	*Min.*	*Range.*	*Mean.*
Sunrise	30th.	65	18th. 26	39	46.70
2 P. M.	25th, 28th, 29th.	66	5th. 35	31	53.10
9 P. M.	29th.	65	17th. 30	35	50.50

Rain on eight days, 2.76 inches. D w on 22 nights.

Wind:			
N. E.	on	4	days.
S. E.	"	1	"
S.	"	3	"
S. W.	"	9	"
W.	"	2	"
N. W.	"	6	"
Variable		5	"

Georgetown, S. C.

SAWDUST AND LIME.

Editor of The Rural Carolinian:

I planted some corn in 1869, manured with sawdust and lime. It had nothing done for it but

two furrows to each row, until after wheat and oat harvest, when the middles were plowed out, and a part chopped over and part y thinned. I had on exhibition corn stalks with from two to six e rs to the stalk at the Cherokee Fair. The seed corn used was my own selection, being improved by me, which I have planted over thirty years. I am within t ree miles of Rome, on land called flat woods, a very heavy clay land with gray soil, and said by many to be too poor for cultivation. T. S. E.

Near Rome, Ga.

EXPERIMENTS WITH VEGETABLES.

Editor of The Rural Carolinian:

Along with the seeds that you gave me in February was the request that I would try them and report, and I now proceed to comply with your request.

Owing to the fact that I could not get my garden fenced in until late, I was unable to try some, as the season was too far advanced, and in others too much so to be able to give a full and fair trial, therefore my report must be, as to the latter, open to further trial.

Peas.—On the 2d March I sowed the "Little Gem" peas, purchased by me, and on the 3d the "Caractacus."

On the 16th March observed the first blossoms of the "Caractacus" pea On the 17th March observed the first blossoms of the "Little Gem" pea. As the Little Gem was thought preferable, none were gathered for use green.

May 3d. First mess of green peas from "Caractacus." By the by, I have never seen in the market, or on any table in Charleston, a mess of green peas that I thought fit to eat, and when I inquired of the farmers why they allowed their peas to get so *old* before they were picked, was told that when gathered young could not be sold, as it was considered that there was too much lost. To all such allow me to say that they do not know what *green peas* are; and I am not surprised to hear persons say that they enjoy *one* or *two* messes of green peas when they *first come in.* My idea is that there are only *two vegetables* that are *never out of season,* when they can be got, viz: green peas that are green peas (not buckshot) and tomatoes; and which is better of the two, I *cannot yet decide.*

March 3. Sowed McClean's "Advancer" peas. March 23d. First blossoms on above; all saved for seed, having few seeds.

May 20. McClean's Advancer now ripening, Little Gem also ripening, and nearly all ripe.

Radishes.—Sowed, March 3d, White Olive-shaped radish, French Breakfast radish, and Convent Garden radish.

April 10th. Gathered first mess of the above, and, upon trial, my family decided that the "French Breakfast" were the best, and to my taste they were the most delicate and pleasantly flavored that I had ever tasted, consequently allowed them only to go to seed to be saved.

The onion seeds failed to come up, as did some others that I had purchased previously, probably owing to the cold, wet spring and cold clay soil.

I found that Northern cantelope seeds, although apparently full and good, did not come up as well nor as early as our grown seeds. The "Casaba" is no new melon, as I had them in 1846, and I cannot recollect that they were anything extra, or I would have noticed it particularly, which I did not. C.

Among the Palmettoes, May 20, 1870.

Sunflowers as Disinfectants.—Experiments in France and Holland have shown that sunflowers, when planted on an extensive scale, will neutralize the pernicious effects of exhalations from marshes. This plan has been tried with great success in the ferny districts near Rochefort, France; and the authorities of Holland assert that intermittent fever has wholly disappeared from districts where the sunflowers have been planted It is not yet determined what effect the flower produces on the atmosphere; whether it generates oxygen, like other plants of rapid growth, or whether like the *coniferæ*, it emits ozone, and thus destroys the organic germs of miasms that produce fever.

Evaporating Fruits.—Much interest was elicited at a recent meeting of the New York Farmers' Club, by an account of a new method of preserving fruit. It was stated that, by the use of not very extensive machinery, the water can be rapidly and entirely evaporated from fruits, leaving all the flavor and peculiar aroma of each in perfection.

Four bushels of tomatoes or other fruits can be reduced in an hour to a state of perfect dryness, and then need only to be put up in paper packages to be preserved for any length of time.

Hints to Housekeepers.—Economy, taste, skill, and neatness in the kitchen, have a great deal to do in making life happy and prosperous.

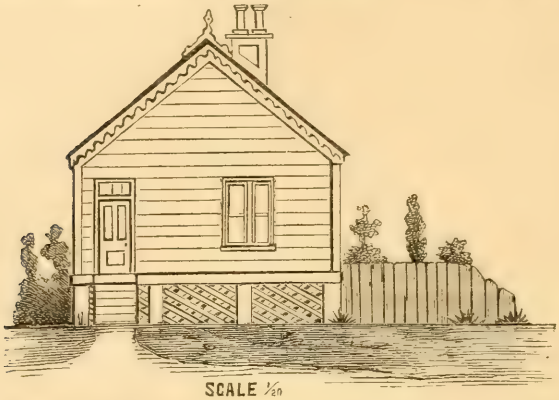
Nor is it indispensably necessary that a house should be filled with luxuries. The qualifications for all good housekeeping can be displayed as well on a small scale as on a large one.

Skilful cooking is as readily discovered in a nicely baked potato or a respectable johnny-cake, as in a nut brown sirloin or a brace of canvass-back.

Bread Rolls.—Mix good fine flour with pure cold water, and make a dough that can be rolled out and cut into strips, which must again be rolled into a round form, the size of the thumb or finger, and cut into pieces, three or four inches long; bake in a hot or quick oven, ten or fifteen minutes; brown them nicely and serve fresh. This bread being free from yeast, saleratus, soda, or other deleterious substance, will be found not only light, pure and sweet, but the most palatable and healthy bread that can be made of fine flour.

Department of Rural Architecture.

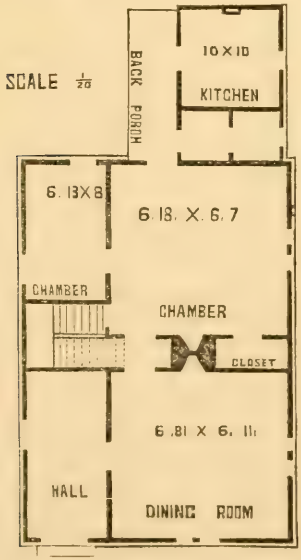
A COMFORTABLE SMALL COTTAGE.



SCALE 1/20

This month we suggest a plan for a very simple residence, sufficient to answer the wants of a young couple, starting in life, but not sufficient to absorb all the capital they may have to start in life with.

A very neat and comfortable home, embracing accompanying plan, may be fitted up for the sum of $850.



The rooms are of a good size, 17, 6, x 18, 6, with a large dressing or children's room, 8 x 13, 6, attached to the chamber.

Should there be no occasion for the garret space, the stairway may be dispensed with, and the space now given to stairway and dressing room be equally divided into two rooms, measuring each 8 x 10. By a sufficient elevation of the roof two very serviceable appartments may be made in the garret.

Of course the cost of this building may be very much increased by elaborate external or internal finish. The estimate above given includes painting and plastering, and supposes all the workmanship to be in a neat but simple style.

A very pretty addition, without much additional cost, may be made in a large bay window in the front.

ALEX. Y. LEE,
Architect and Civil Engineer.

ARCHITECTURE AND ENGINEERING.

The art of architecture should combine the art of the engineer with that of the architect.

The art of the engineer consists in selecting the best and most appropriate materials for the object he has in view, and using these in the most scientific manner, so as to ensure an economical but satisfactory result; where the engineer leaves off, the art of the architect begins. His object is to arrange the materials of the engineer, not so much with regard to economical, as to artistic effects, and by light and shade, and outline, to produce that which in itself shall be permanently

beautiful. He then adds ornament, which, by its meaning, doubles the effect of the disposition he has just made, and, by its elegance, throws a charm over the whole composition. Viewed in this light it is evident that there are none of the objects which are usually delegated to the civil engineer which may not be brought within the province of the architect. A bridge, an aqueduct, a pier, are all legitimate subjects for architectural ornament.

A. Y. L.

BRICK WORK.

1 rod of brick work = 272 superficial feet, 1½ brick thick.

1 rod of brick work = 11⅓ cubic yards = 306 cubic feet.

1 rod of brick work = 4,350 bricks average work.

1 rod of brick work = 5,370 bricks laid dry.

36 brick flat, or 52 on edge, = 1 yard paving.

Number of bricks in 1 cubic yard = 384.

1 load of mortar = 1 cubic yard.

1 load of sand = 1 cubic yard.

1 cubic yard brick work requires about 6½ cubic feet of sand, and 2½ cubic feet of lime.

A. Y. L.

MORTAR AND CEMENT.

Mortar.—1 of lime to 3 or 3½ of sharp river sand; or, 1 of lime to 2 sand and 1 blacksmith's ashes, or coarsely ground coke.

Coarse Mortar.—1 of lime to 4 of coarse gravelly sand.

Concrete.—1 of lime to 4 of gravel and 2 of sand.

Hydraulic Mortar.—1 of blue lias lime to to 2½ burnt clay, ground together.

Beton.—1 of hydraulic mortar to 1½ of angular stones.

Cement.—1 of sand to 1 of cement. If great tenacity is required the cement should be used without sand.

Portland Cement—Is composed of clayey mud and chalk ground together, and afterward calcined at a high temperature. After calcining it is ground to a fine powder.

A. Y. L.

Department of Literary Miscellany.

"OH! WHAT IF THE PROSPECT BE CLOUDED."

A LAY OF ENCOURAGEMENT.

I.

Oh! what if the prospect be clouded,
And what if our sunlight be fled?
The bright sun himself may be shrouded,
And the bright crown be torn from his head;
But he yields never long to the rigor,
Of the tempests that beat on his form;
And he comes forth anon, full of vigor,
More glorious because of the storm.

II.

From the sun let the soul take its moral,
Nor shrink 'neath the battle of Life;
Near the cypress grows ever the laurel,
And we pluck, as we please, from the strife!
Though the foe presses fierce with his legions,
And we stoop for the hour to his will,
Keep your calm in the turbulent regions,
And the triumph enures to you still.

W. Gilmore Simms.

THE GARDEN OF PLANTS.

One of the most interesting places to visit in Europe is the celebrated *Jardin des Plantes*, Paris. It is not merely a "Garden of Plants," however, but a grand school of the natural sciences. A correspondent presents some valuable facts concerning it:

The cultivation of the plants has naturally occupied the most minute attention of its professors here. The lectures on cultivation and botany, free to all, are well attended by foreign and French agriculturists, and the garden, in return, receives daily from every portion of the world some returns in bread from the seed sown so liberally from its pulpits. Vespasian Robin and the brothers Thouin brought the first contributions to its flower-beds, and Professor Decaisne to-day succeeds and holds up worthily the mantle of his great predecessor, M. de Mirbel.

The collection of fruit trees is most remarkable, and a monumental work is now in course of publication, entitled *Le Jardin Fruitier du Museum*, in which all the species of this precious collection, so useful for horticultural history, are noted and described. There are nine hundred varieties of pears alone. Sweet-water plants, in contradistinction to sea-water plants, here find a special attention.

In the central flower-beds (of perennial plants) it will be noticed, above all if we visit it in the present month, that the colors of the flowers have a most unwonted brilliancy. This is not real, but only the effect of the disposition of the plants, by design, after the laws of contrast in colors, discovered by M. Chevreul. Every flower is as much indebted to its neighbor, perhaps more so, than to its own petals for its brilliancy of color. Separated, they lose that marvellous coloring which they give back to us when we look upon them together. Near these beautiful beds is the first accaia planted in France, in 1787, by Vespasian Robin. Buffon died in the building now used as the *intendance*. The portion reserved to the botanical students, to which any can enter with a ticket which they have to seek for at the direction of the administration, is very vast (some six acres) and divided up into little squares of about a yard. In each you will see the iron label which gives you the name of the plant, and when they ripen, the seeds are carefully gathered and distributed throughout the country, as the quality is supposed to be the best and the species most desirable to propagate. All the poisonous plants, like belladonna, are in the same little squares, but covered over with an iron cage so they cannot be reached.

One of the greenhouses is appropriated to the plants of New Zeland, New Holland and the highlands of Mexico. In the one farthest westward, which is always kept heated, the tropical plants are in the greatest luxuriance. Here is the bamboo, the elephants' grass, and the canepole. One of the plants here, the leaves of which are no less than thirty feet long, has several times pierced the outside glass. To avoid the annual repairing of the greenhouses, the top leaves of this plant, the *Arengha*, are always cut.

In the round and the Holland hot-houses are to be found the palms, the cocoa, and the *cycas*, which is a great rarity; plants from Central America and the West Indies, from Africa and the Cape, such as *cycadees*—those plants whose leaves appear cut off from metal; *orchidees*, *pandances* and the *tornelia fragrans*, which is supported from a plateau, and winds its leaves in with its falling roots. Here is also a remarkable specimen of the *Victoria Regia*. But to mention all, or even the principal plants in these vast greenhouses, would require more than a volume. To give an idea of the importance of a plant properly bestowed, one fact connected with the Garden of Plants will suffice. In 1720, Antoine de Jussieu, Professor at the Garden, gave a coffee plant to an ensign of a sloop of war going to the westward, (M. Declieux,) who carried it to Martinique. That single plant has produced all the coffee plants now known in the West Indies; just as from the single accacia, planted in this garden in 1637 by Vespasian Robin, were produced and grown all the plants of that species now so common throughout France and her colonies.

NACOOCHEE.

Child of the Chattahoochie!
Hid in the hills afar!
Beautiful Nacoochee,
Vale of the Evening Star!

Hushed in the mountain shadows,
With the May dew on her breast;
Her breath is the breath of meadows,
And her very name sings "Rest!"

The voice of a loved one calling,
The feet that have wandered far;
Come! for the night is falling!
Rest! with the Evening Star.

F. O. Ticknor, M. D.

Torch Hill, Columbus, Ga., May 5th.

FROM THE COLLEGE TO THE FARM.

Bronson Alcott, in a little book entitled "Tablets," just published, wisely says: "I have always admired the good sense and fine ambition of a friend of mine, who, on quitting college, with fair prospects of winning respect in any of the learned professions, choose rather to step aside into the quiet retreat of a cottage, and there give himself to the pleasures and duties of cultivating his family and grounds. And this he did from a sense of its suitableness to promote the best ends and aims; esteeming his gifts and accomplishments due to pursuits which seemed the natural means of securing self-respect and independence. His first outlay was moderate—a sequestered field, on which he erected a comfortable dwelling, planned for convenience and hospitality. His grounds were laid out and planted with shrubbery, the slopes dotted with evergreens and shapely trees. A nursery was set; a conservatory, with suitable out-buildings and ornaments. As he gave himself personally to the work, everything prospered that he touched. A few years' profit paid for his investment, and his thrift soon enabled him to add an adjoining orchard to his first purchase. And so successful was his adventure, that his most sceptical neighbors, the old farmers, confessed him to be the better husbandman; his gold was ruddier than theirs; his fields the neater. Nor

did our Evelyn disgrace social engagements. His friendships were kept in as good plight as his grounds. He was none the worst citizen for being the better neighbor and gentleman they found him to be, nor the less worthy of the honors of the college."

THE KNOT OF BLUE AND GRAY.

Upon my bosom lies
A knot of blue and gray;
You ask me why. Tears fill my eyes,
As low to you I say:

I had two brothers once—
Warm-hearted, brave and gay;
They left my side—one wore the blue,
The other wore the gray.

One rode with Stonewall and his men,
And joined his fate to Lee;
The other followed Sherman's march
Triumphant to the sea.

Both fought for what they deemed the right,
And died with sword in hand;
One sleeps amid Virginia's hills,
And one in Georgia's sand.

The same sun shines upon their graves—
My love unchanged must stay;
And so upon my bosom lies
The knot of blue and gray.

A TRIBUTE TO THE SOUTH.

The South has two noble characteristics, which, left to their natural working in society, are enough in themselves to lift communities from any depth of disaster and set them on the highway of renown. She has a brave way of looking facts full in the face, admitting the truth, comprehending the extent of a disaster as a preliminary to fresh enterprise. This she honestly came by through the blood of the men who two hundred years ago felled the original oaks and pines on the banks of the Potomac, the James, the Roanoke and the Savannah. Second, the crowning occupation to which every good Southron aspires, the noblest, purest, most honest and permanent vocation for man is in his opinion that of a tiller of the soil. Given these as premises in any society, and no disasters can prove irretrievable.—*Horace Greeley.*

LAST WORDS OVER TWO GREAT WORKS.—"*Gesta dei per Francos,* le Canal de Suez est l'œuvre de Dieu et de la France," [the Suez Canal is the work of God and of France,] says M. Lesseps, at the conclusion of his labors. "We've got through praying and are going to strike," was the message which sped from Promontory Point to all the cities of the Union, after the thanksgiving had been uttered, and the hammer was about to descend on the last spike which completed the Pacific Railway. As *Engineering* remarks, these utterances are characteristic of the two great nations that had achieved two great national undertakings.

PITHY BREVITIES.

—— Woman shows her fondness for unity by always wanting to be won.

——Retrace your steps when you have done wrong; it is nobler to retract than sustain a bad cause.

—— The first record of sugar-planting which we know, is when Adam and Eve are spoken of as having raised Cain.

—— A sagacious observer says: "When I see children going to their father for comfort, I am sure there is something wrong with their mother."

—— Richter observes with justice that no school is more necessary to children than that of patience, because either the will must be broken in childhood, or the heart in old age.

—— While a mother was brooding over her poverty, her little son said: "Mamma, I think God hears when we scrape the bottom of the barrel!"

——A little boy having broken his rocking-horse the day it was bought, his mamma began to scold, when he silenced her by inquiring, "What is the good of a hoss till it's broke?"

——If a well-bred woman is surprised in careless costume, she does not try to dodge behind the door to conceal deficiencies, nor does she turn red or stammer confused excuses. She remains calm and self-possessed, and makes up in dignity what she may want in decoration.

I hear thy voice in murmuring pines,
I see thine image in the lake;
Some fancy of thee ever twines
With all I compass or forsake.

For thou a subtle spell hast spread
O'er night and day, o'er land and sea;
All help to twine the charmèd thread
That leads my footsteps back to thee.

Hygiene and Household Economy.

BAKING POWDERS.

Fermentation in bread-making is a chemical process, resulting in the conversion of a portion of the nutritive elements of the flour into alcohol and carbonic acid and the production of a light or porous condition in the dough. To give the dough this porous quality or cellular structure in some simple, practicable way, without the aid of fermentation, and with the sweetness and nutritive value of the flour unimpaired, is an object to which chemists have devoted much attention, and several methods have been tried with more or less success; but in general they have been liable to weighty objections.

A few years ago, the distinguished Rumford Professor in Harvard University, Prof. E. N. Horsford, introduced a baking-powder to the world, by the use of which not only all objections seem to be obviated, but also the phosphates lost in the preparation of ordinary superfine wheaten flour are restored to the bread. It has been ascertained that the nutritive value of the bread is increased from 8.5 to 14 per cent. by the new method. There is no loss of time in waiting for the bread to rise, and cold and warm water can be used, as may be most convenient.

The Horsford baking-powders consist of two preparations in the form of powder, an acid and an alkali. One contains an acid phosphate of lime and magnesia, the other bicarbonate of soda. Both powders are white, and flour-like in fineness; each is packed by itself, and both are inclosed in a large wrapper. A small tin measure, in the form of two truncated cones of unequal capacity, the bottoms soldered together, is employed in using the powders. For each pound of flour, the small measure is filled with bicarbonate of soda, and the larger with the acid phosphate, and the contents of both are intimately mixed with the flour. To this mixture the required quantity of water is added, the mass is worked into a loaf of dough, and immediately placed in the oven.

The result is light, sweet and in every way excellent bread, as we know by having used these powders in our own family for more than a year.

SLEEP AS A MEDICINE.

The *Herald of Health*, discussing the subject of sleep, gives utterance to the following suggestive truths, which should be heeded by the legion of our readers interested. Listen:

The cry for rest has always been louder than the cry for food. Not that it is more important, but it is often harder to get. The best rest comes from sound sleep. Of two men or women, otherwise equal, the one who sleeps the best will be the most moral, healthy and efficient.

Sleep will do much to cure irritability of temper, peevishness, uneasiness. It will cure insanity. It will restore to vigor an overworked brain. It will build up and make strong a weary body. It will do much to cure dyspepsia, particularly that variety known as nervous dyspepsia. It will relieve the langour and prostration felt by consumptives. It will cure hypochondria. It will cure the blues. It will cure the headache. It will cure neuralgia. It will cure a broken spirit. It will cure sorrow. Indeed, we might make a long list of nervous maladies that sleep will cure.

The cure of sleeplessness, however, is not so easy, particularly of those who carry grave responsibilities. The habit of sleeping well is one which, if broken up for any length of time, is not regained Often a severe illness, treated by powerful drugs, so deranges the nervous system that sleep is never sweet after it. Or, perhaps, long continued watchfulness produces the same effect; or hard study, or too little exercise of muscular system, or tea and whiskey drinking and tobacco using. To break up the habit are required:

1. A clean bed.
2. Sufficient exercise and pleasant occupation to produce weariness.
3. Good air, and not too warm a room.
4. Freedom from too much care.
5. A clean stomach.
6. A clear conscience.
7. Avoidance of stimulants and narcotics.

For those who are overworked, haggard, nervous, who pass sleepless nights, we commend the adoption of such habits as shall secure sleep, otherwise life will be short, and what there is of it sadly imperfect.

MALARIOUS DISEASES.

Prevention is better than cure, and hygienic measures are safer than drugs. We believe that by the strict observance of a few plain rules, fever and ague and other malarious diseases can be generally prevented, even in the most unhealthful localities. We suggest the following:

1. Use only rain water for drink, or, when

this cannot be had, boil the well or spring water before using, and mix some cooling acid—lemon juice, wine, cider or vinegar—with it.

2. When the evenings are cool, light a blazing fire, either in the house or on the ground near it.

3. Avoid going out after sunset and before sunrise.

4. Take a cup of coffee before going out in the morning, if forced to go before breakfast.

5. Use carbolic soaps for cleansing the person at the daily bath.

6. Expose carbolic acid in some form constantly to evaporation in every room in the house.

7. Avoid bacon and pork in every form, and eat sparingly of other kinds of meat.

8. Eat freely of tomatoes and of juicy, acid fruits generally.

9. Avoid bad whiskey and other drugs.

10. Take sufficient exercise during the day, but carefully avoid over-exertion and everything calculated to depress the tone of the system.

WHOOPING-COUGH.

Dr. Howard Sargent, of Boston, writes to the *Journal of Chemistry* that for eight or ten years he has used, as a remedy for whooping-cough, a tea made from red-clover blossoms. He says :

"It is so simple that many would not give it a second thought. I can say with truth that I never knew it fail. I generally expect a cure in ten days. Four years ago I had children in three families sick at the same time: they were all well in ten, twelve or fourteen days. There is some care and art necessary in making the tea. I select and cure the blossoms myself, and take of the best blossoms about two ounces to a pint of boiling water, steep for four hours, and give a wineglassful occasionally during the day. Should it operate on the bowels, no harm is done; the dose, in that case, may be diminished."

Early Breakfasts.—The earlier the breakfast, the more work will be got through with during the day, and the better health will the household have, because food or warm drink in the stomach antagonizes the disease-engendering damps, fogs, and miasma, which impregnate the air about sunrise, in all countries, especially in warm weather.

RECIPES.

Irish Stew.—About two pounds of a neck of mutton cut in pieces. Season with pepper and salt; slice three onions thin, put them in a stew-pan, put the mutton over, and pour in just sufficient cold water to reach, but not quite cover the mutton. Let it boil up, and then simmer gently for an hour and a quarter. Peel two pounds of potatoes of the same size, and place them on the mutton, and dredge over a little flour. Simmer half an hour longer, and serve hot.

King's Biscuits.—Put half a pound of butter into a basin and turn it about well with a wooden spoon. Whisk six eggs well, add half a pound of powdered sugar, whisk another ten minutes, and then mix with the butter, after which stir in six ounces of dried currants, and an equal quantity of flour. After mixing these all well together, drop the mixture on paper, each about the size of a shilling, and bake in a quick oven, take the biscuits off the paper while hot.

Sweet Potato Pie.—Boil sweet potatoes tender. Line your dish with a rich paste, slice in the potatoes very thin, flavor highly with butter, sugar and cloves. Pour a little brandy over the top, cover with a rich paste, and bake about as long as for an apple pie.

Gateau Parisien.—Lay slices of sponge cake at the bottom of a glass dish; spread over them a layer of preserve, (red or black currant is very good for the purpose,) place over that more slices of sponge cake, then another layer of jam. Do this until you have filled the dish. Pour over it sufficient sherry to soak the cake properly; then beat up the whites of four eggs, with sufficient powdered loaf sugar as to make it a very stiff froth, with which cover the top of the cake completely. Strew tiny colored comfits over the top.

Orange Pudding.—One pound of sifted sugar, half pound butter, one pint cream, six eggs, and a light-colored orange—that is, not bitter. Beat the butter and sugar to a cream; add the eggs well beaten, the grated orange pulp and peel, and then the cream. Stir ten minutes, and then bake.

Elder-Flower Water.—This exquisite wash for the complexion can only be made during that portion of the year when the elder-flowers themselves can be procured. Put a quantity into a jug, and pour boiling water thereon. When cold, strain and pour the liquid into a bottle, which must be kept well corked. After the morning's ablutions, apply the wash to the face with a cambric handkerchief, and let it dry on. It may be used several times a day during the hot weather.

To Whiten Straw Hats.—Scrape stick sulphur with a knife, mix the powder to a mush with water, plaster it thickly over the straw, and place in the hot sun for several hours; brush off when dry. An easy and effectual plan.

Tomatoes for Costiveness. — Costive bowels have an agreeable remedy in the free use of tomatoes at meals, their seed acting the way of seeds of white mustard or figs, by stimulating the coats of the bowels over which they pass, in their whole state, to increased action.

Rice Loaf Bread.—One pint of rice boiled soft; let this get perfectly cold; half pint home-made yeast, one egg, a small lump of butter, (about a desertspoonful,) salt, one quart of rice flour; mix this at night to bake for breakfast. It requires a moderate oven, and to be baked one hour. This bread is particularly nice toasted.

The Rural Carolinian is clubbed with the following first-class newspapers, at the rates annexed. Remittances in all cases direct to either office:

	Daily	Tri-Weekly	Weekly
Charleston (S. C.) News			$3 00
Richmond (Va.) Dispatch	6 50	4 00 semi-w.	3 00
Augusta Constitutionalist	10 50	7 50	4 00
Savannah News	10 50	6 50	3 00
Macon Telegraph	10 50	5 00 semi-w.	4 00
Columbus Sun	11 00		3 00
Mobile Tribune	11 00		4 00
The Weekly Gleaner, Columbia, S. C.			4 00
Star and Southern Real Estate Advertiser, Marion C. H., S. C			4 00
Christian Index, Atlanta, Geo.			5 00
Quitman Banner, Quitman, Geo.			4 00
Union Times, Unionville, S. C.			4 00
Gazette, Meridian			4 00
Locomotive, Opelika, Ala		5 50 semi-w.	
The Scooba Spectator, Scooba, Miss.			4 00
Press and Messenger, Eatonton, Geo.			3 00
Banner of the South, Augusta			4 00
"Commonwealth," Marion, Ala.			5 00
Journal, Barnwell, S. C.			3 00
Maryville Republican, Maryville, Tenn			2 75
"Enquirer," Yorkville, S. C.			4 00
"Clarion," Jackson, Miss			
Shield, West Point, Ga.			3 00
"Examiner," Salisbury, N. C.		6 00	3 00

The following Club Rates are offered by the publishers:

6 Subscriptions		$10 00
10	"	16 00
20	"	30 00

Money remitted by mail in *registered letters*, postoffice money orders, at our risk.

RATES OF ADVERTISING.

The attention of advertisers is especially called to the following rates of advertising, as no advertisements will be received at less than these rates:

	1 Mo.	2 Mos.	3 Mos.	6 Mos.	1 Year.	REMARKS.
1 page	$25	$45	$60	$100	$180	Outside back cover
¾ page	20	35	50	80	140	double rates. Inside
1 column	15	28	40	60	100	back cover, 50 per
¾ column	12	22	30	50	90	cent. added to rates.
½ column	10	18	25	40	75	No advertisements
¼ column	5	9	13	24	40	taken for front cover.
⅛ column	3	6	8	12	20	

No editorial notice given to advertisements on any consideration. Nothing paid for inserted in reading matter.

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George Peabody

THE

RURAL CAROLINIAN.

Vol. I.] JULY, 1870. [No. X.

George Peabody, the Great Benefactor.

Had George Peabody been only a rich man, he would hardly have been deemed worthy of the briefest mention in these pages. Even as a liberal giver from the vast accumulations of a lifetime of successful effort, his case is not so singular as to call for particular admiration; but in his mode of giving and in the spirit which actuated him throughout—in the lesson of his simple but noble life, there is something which commands our homage and gives us more exhalted ideas of the possibilities of humanity.

Mr. Peabody was not what is commonly called "a philanthropist." He was misled by no dream of reforming the world and banishing want and woe from society. He was a practical man in his benevolence as well as in his business; in fact, in the words of another, "he made benevolence his business and dealt with it as such."

"Looking at human nature in the light of his own experience, and valuing most highly in it that healthy, vigorous independence which was his own peculiar trait, he thought he could help his fellow-creatures best by teaching them to help themselves. He likewise thought that, on the whole, more good was to be done by striking the evils of humanity at their root than by providing for a few of their victims. These were the simple principles which guided the application of his bounty. He persuaded himself that cleanliness, industry and thrift are preventives of disease and poverty; that the vices which fester in the squalid den have no place in the decent and cheerful home; so, instead of founding hospitals and almshouses for London vagrants and paupers, he offered the attraction of cheap and comfortable dwellings to those who are willing to work. He believed that education, refining occupations, cultivated tastes, the study and the love of art and science are, next to religion, the great safeguards and purifiers of society, and accordingly he founded institutes, libraries, professorships, boards of education, to diffuse and encourage

them among his countrymen. In all this he followed the bent of his life—investing instead of spending. Nor did he follow the example of some founders who retain control over their foundations and deceive themselves into the belief that they are administering what they are only unable to give up the pleasure of handling. He placed all that he gave in the hands of others—absolutely and without reserve. It was his honest and deliberate judgment that the best use he could make of the grain he had garnered was to turn it into seed, not food. So he chose his ground and planted, in the faith that future seed-time and oft-returning harvest would vindicate his choice, under His blessing who sends down the early and the latter rain."*

The career of Mr. Peabody, magnificent as its results have been, has no particularly brilliant points. He was the son of poor parents; was early thrown upon his own resources; became a merchant; was industrious, energetic, courteous and upright; accumulated means; became a banker, sustained his own credit and that of his country in the most trying times, and honestly won the wealth which he afterwards so wisely bestowed. This is his history in a single sentence. The principal incidents of his life, are thus narrated:

"He was born at Danvers, Mass., February 18th, 1795. His only education was obtained at the district school of his native place. When but a mere boy of eleven, he entered a grocery in Danvers, and did his part of the miscellaneous duties of such a situation. At fifteen years of age, he became clerk in his brother's dry-goods store in Newburyport, Mass., and two years afterwards went into business as a partner of his uncle at Georgetown, District of Columbia, over whose business he had entire control.

"When the war of 1812 opened with England, young Peabody enlisted as a volunteer, and saw some service at Fort Warburton. At the conclusion of the war, he entered into partnership in the drapery business with Mr. Elisha Riggs, a friend of his who furnished the necessary capital. The enterprise proving a success, the firm in 1815 removed to Baltimore.

"In the prosecution of business, Mr. Peabody visited England several times, and having become convinced that his interests would be best subserved by settling in London, he in 1837 removed thither, and continued in trade some years with much success.

"In 1843 he became a banker, and by the exercise of his native skill, sagacity, and energy, acquired in that vocation the bulk of his vast fortune. His numerous and most liberal offerings to education and for the benefit of the poor, which have made his name so popular, would require no little space for specific mention. Some of the more prominent will bear reiteration here, as his contribution of about $200,000 to found the Danvers Peabody Institute; $1,400,000 to the Baltimore Institute; $1,500,000 to the Southern Educational Fund; $150,000 each to Yale and Harvard Colleges; $2,000,000 to the London poor. Among his relatives living, he is said to have distributed $1,500,000,—those the most distant in degree of consanguinity receiving $50,000, and those nearer $100,000."

As a banker, he dealt chiefly in American securities, and pursued so straightforward and honorable a course that his name not only came to be a guarantee for credit, but contributed largely to strengthen the confidence of foreign

*Memorial Discourse, by S. Teackle Wallace of Baltimore.

capitalists in our national finances. Among his peculiarities, one was that of an indisposition to have a house of his own. This may be accounted for on the ground of his being a bachelor, and at the same time fond of society. He cared little for himself in all things, and at the dinners he gave from time to time to his friends, while everything attractive to the appetite was provided, he found all the gustatory pleasure he desired in a plain, simple dinner.

He lived in the house of Sir Curtis M. Lampson, an old friend, for several years, and there it was he died, on the 4th of November, 1869.

"There is an Eastern story of a man who could bear a thousand pounds weight, but a single hard word was too heavy for him; and there are times when to hush that word and say a single one of kindness is the grandest act and the richest gift of charity. Mr. Peabody had lived among us, a Northern man among a Southern people, loving and beloved. He had left us happy and united—he returned to find us sullen and divided. The wounds of our then recent civil strife were yet unhealed. Political antagonisms, social resentments—personal and even domestic animosities—were still rankling, and it was next to impossible for any man to speak without offence to some one whom he cared for of what brooded so ominously over the hearts of so many. But Mr. Peabody felt that his opportunity was great for good, and that opportunity made duty. He took the chances of offence and spoke what was in him like a man. While he proclaimed that his sympathies had been always with the Union and his hopes with the success of its armies, he dared to proclaim at the same time his respect for the integrity and manhood of the vanquished. He traced and recognized with the philosophy of truth and kindness the influence of birth and education on opinion. He braved the censure of zealots on the one side by dealing with the convictions of the South as error—he braved it equally upon the other by a manly protest against confounding such error with crime.

"'Never, therefore,' he said, 'during the war or since, have I permitted the contest or any passions engendered by it to interfere with the social relations and warm friendships which I have formed for a very large number of the people of the South. * * * * * And now, after the lapse of these eventful years, I am more deeply, more earnestly, more painfully convinced than ever of our need of mutual forbearance and conciliation, of Christian charity and forgiveness, of united effort to bind up the fresh and broken wounds of the nation.'

"He had taught us that brilliant qualities of intellect or character are not indispensable to make men useful or honored, and that the real benefactors of their kind are not they at the sound of whose name the world stands still. He had shown how the humble and the poor may lift themselves among the great ones of the earth by industry, integrity, and independence, and how the rich may keep above their riches by clinging to the treasure of their souls. He had taught how the simple dignity of manhood may rise superior to rank and station, and that all the grandeur of power lies only in its uses. He

had ennobled wealth by his touch, as knights give knighthood, and established as the canon of its primogeniture that humanity is its first-born. It was only left for him to show to his own brethren that men may love their country without intolerance, may fight her battles without hate, and be conquerors without revenge.

"The blessings of the peace-makers be upon him and his memory!"*

Sugar-Cane for our Coast Region.

The natural adaptability of the coast of South Carolina, Georgia, and Florida, for the cultivation of the sugar-cane, is quite apparent, and as it is evident that the cultivation of long cotton must cease, by reason of the danger of loss attending it, the former staple is presented as the one that must take its place.

The sugar-cane is now the chief source of the sugar supply of the world, and furnishes about eleven-twelfths of all the sugar consumed. It was first cultivated, and sugar was manufactured from it, in China, fully seven hundred years before Christ, but it was not known in Europe until about A. D. 1270, when it was introduced into Sicily. About half a century later, it was planted in the Madeira and Canary Islands. After the discovery of America, it was introduced by the Portuguese into the West Indies, where its cultivation spread with such rapidity, that in 1520 the production of the Island of St. Thomas alone was forty-six hundred and fifty hogsheads of sugar. The cane was introduced into Louisiana in 1750, by some Jesuit priests, from St. Domingo, who also brought with them some negroes, who understood the cultivation of it. These priests settled upon lands now covered by the city of New Orleans, and from that location the cultivation of the cane extended gradually, but slowly, at first over the surrounding section of the country. It was for a long period, however, that cane was cultivated only for the syrup, as the manufacture of sugar was not attempted there until nearly the year 1800, when the requisite machinery was imported, and the first attempt was crowned with every success. A new impetus was thus given to cane cultivation, and it rapidly extended, until in 1860; for two hundred miles up both banks of the Mississippi, far up the Red River, and along their tributaries, and far westwardly along the Gulf coast, the dark green fields of cane are spread out over the even surface of Louisiana. The cane has become thoroughly acclimatized to that State, and having entirely superseded cotton, has become its staple product. The crop last year recorded, (1868,) was 6,050,000 gallons of molasses, and 84,256 hogsheads of sugar, only one-fourth of her annual crop prior to the war; but it is estimated that she alone is capable of supplying the entire consumption of the United States.

It is estimated that the consumption of the world amounts to about

*S. Teackle Wallace.

4,527,000 hogsheads of sugar from cane alone. Of this immense quantity, the largest proportion is yielded by the British possessions in the East and West Indies. As we have seen, Louisiana yields a comparatively small portion. The Mauritus yield annually about 325,000 tierces of sugar, equal to the best produced any where else. The Sandwich and Philippine Islands, and China produce most of the balance of the world's supply. The annual consumption of Great Britain now amounts to the enormous quantity of about 820,000 tierces, equal to about twenty-nine pounds per head of the population. That of the United States is equal to about twenty-five pounds per head.

The cultivation of sugar-cane is more remunerative than that of any other staple. An acre of land in the West Indies yields on the average about 4,000 pounds of sugar, and 150 gallons of molassess, worth certainly $500 on the island where produced; and although the average yield of Louisiana is not so high, still it is sufficiently great to render the sugar planters of that State notoriously wealthy. And instances are common in Florida, where the cane is cultivated to a small extent, of planters realizing $300 per acre from its cultivation.

It is very desirable that our coast planters should give sugar-cane a fair trial. Sea Island cotton has proved, since the war, very unremunerative, and the climate and soil of our coast are well suited to the cane. The settlement of a sugar plantation need not be necessarily expensive. The cost depends upon the scale of the undertaking. We hear of the enormous value of sugar estates in Louisiana, but they are of enormous size, some containing nine thousand or ten thousand acres of land under cultivation, and having machinery costing $170,000. But a small sugar plantation can be settled for a small amount of ready money, and as the plantations are already owned, the most heavy cost is thus obviated, and the machinery alone will have to be provided. Let our planters examine into this subject of cane cultivation, and make a trial of it in place of the long cotton, which has been so ruinous to them. F.

Beaufort, S. C., June, 1870.

Guano and its Uses.

Guano, from the Peruvian word "*huano*," meaning manure, is of unknown antiquity. The Incas, the monarchs of Peru, and their subjects, used it from time immemorial on their barren shores, and esteemed it of national importance. The present rulers of that country, in their jealous care, and deriving from it a public income, are only following in the footsteps of their Indian predecessors. No doubt English, and other navigators, a century or two ago, knew of its existence, and witnessed the effect of its application. Baron Humboldt, the *savant* and traveller, on returning from South America, transmitted samples of it to two eminent chemists in Paris, who, in 1806, published

an elaborate analysis and description of them. In 1824 two barrels were sent to J. S. Skinner, of Baltimore, (the editor subsequently of the *Farmer's Library*, and of *The Plow, the Anvil, and the Loom*,) who distributed them for experiment, which resulted in extraordinary success. In 1840 twenty barrels were sent to be tested on English soils, it having been previously tried in Europe as a matter of curiosity. The effect surpassed all expectation, and almost challenged belief. Its fame extended, and the very next year (1841) 2,881 tons were imported, followed in 1845 by 283,300 tons, when its reputation became permanently established. In 1847, 1,013 tons were brought to the United States, and in 1853 the number was increased to 175,840 tons.

Before this time the rage in England had been for bones; these had been brought from all countries, and even the battle-fields had been ravaged for the remains of men as well as of animals, to supply the increasing demand. The results, particularly on the turnip crops, had justified the practice, and chemists still commend it to general adoption.

Guano, however, furnished other elements, which were at once acknowledged and approved. Its concentrated form, rendering in pounds that which requires bushels of ordinary manure to supply; the facility of transporting and applying it; its never fouling the land, like the barn-yard composts, with seeds of noxious weeds and grasses; its prompt action, the wonderful increase of yield, and its adaptation to all soils and plants, together with its superabundance of ammonia—the controlling energy, the vital spark of the fertilizer—all these advantages and virtues seemed to fix its supremacy. To it may be ascribed, in good part at least, the impulse recently given to agricultural progress—more especially to the extended scheme of manuring, which is the principal propelling force. Its astonishing success stimulated to the more careful preservation, and the wider employment of plant nutriment of all kinds. It quickens the spirit of experiment and renovation. It originated and formed the basis of nearly all the valuable manipulated fertilizers; and probably of the many others, whose names and numbers are multiplying beyond estimate; while all the influences it has set in motion, promise, by increasing and cheapening the productions of the earth, to add vastly to the comfort of the race, and promote its advancement in all the varied pursuits of life.

This guano is found on rocky isles, lying along the coast of Peru, and was accumulated during very many centuries of time, by multitudes of sea-fowls that frequented them during the season of breeding. In some places the deposits are fifty or sixty feet thick, requiring to be excavated as in mines. There are several qualities of guano in the same bank, bearing different prices; the white, which is most recent, is purer and far stronger; next, the grayish brown, and the older and lower strata, the rusty red, as if it were tinged with oxide of iron. The first is consumed exclusively in the home markets. The British Board of Trade report that the superficial strata in the Guanape Peruvian Islands, are deficient in soluble salts from the "vicissitudes of the atmosphere," while the lower strata are richer in these ammo-

niacal soluble salts. The practice of the natives, and their preference of the recent formation, prove that their soil demands the insoluble salts, or that the "vicissitudes of the atmosphere" are only disturbing in theory. The best of all the varieties is taken from these islands, where it seldom or never rains, for being partially soluble in water, it is liable to damage. Having undergone fermentation, and partial decomposition at least, the loss from evaporation by exposure to dry air is inconsiderable—the elements being fixed against temperature, but not against an alternation with moisture. The effluvia escaping is not a certain criterion of much waste, since it is well known that a few grains of musk will perfume the surrounding atmosphere for years, without sensibly diminishing in weight.

In Peru, the guano is applied to all crops. The method is to drop a pinch of it to the plant when a few inches high, and immediately to irrigate. And, again, when in tassel or in bloom, a handful is thrown to each root, followed promptly by irrigation. The application in liquid form is unquestionably conducive to the greater benefit, since there would be no burning, and it would be more readily absorbed and assimilated by the plant. For gardens or orchards, an engine or a cart would very well serve the purpose of distribution; but there is no contrivance yet devised for such application on the extensive scale of a cotton plantation. The yield of Indian corn in Chancay Valley, above Lima, was three hundred for one, while the natural soil would only produce fifteen for one. The Peruvians say that "Guano, though no saint, works miracles." The quantity employed in some instances amounts to 500 pounds per acre—differing from some of the mincing practitioners, who scatter a single ton over a forty-acre field, and complain that the harvest is not a fortune! The Peruvians are emulated, however, in some localities, and often with corresponding gratifying results. It is not uncommon in England to apply 800 pounds to the acre, and on grass lands in that moist climate, 3,000 pounds per acre have been used without detriment. On one occasion, 500 pounds produced thirty tons of turnip bulbs to the acre! Professor Johnston recommends 300 to 400 pounds per acre. A market-gardener near New York—Peter Henderson—applied 1,250 pounds of the best Peruvian guano to the acre, "alternating some years with seventy-five to 100 tons of stable manure," or 2,000 pounds of phosphates. These operations appear gigantic, but eminent success during twenty years of gardening, would seem to confirm the soundness of judgment. In our warmer Southern clime, and drier atmosphere, on silicious soil, which predominates, these large applications would be hurtful, and probably in all cases are unnecessary. The ingredients of the fertilizer are known; the elements, organic and mineral, which constitute the plant, are as well known by the active skill of the chemist; and, making allowances for the tillage, for the season, hot or humid, thus judging the possible and the probable absorption and assimilation of plant food, the requisite quantity to be used may be satisfactorily determined. The mass of testimony would urge that intermixture with several times its bulk of earth or mould, or with stable manure, is better in every way than

to apply it alone. Some cotton seed have been killed by contact with it, others have flourished—perhaps owing to the purity of the article in the one instance, and adulteration in the other. Garden seeds are usually destroyed in whole or in part. The earth, or manure, absorbs and retains moisture, which the guano does not, and the play of chemical affinities would render harmless the qualities of the guano, calculated to injure the germ or the tender rootlets. These would not be needed, as often suggested, to obviate the *over* stimulus to the plant. Containing only the elements of food, although concentrated, it would be like wholesome nourishment to man or beast—invigorating, and promotive of rapid growth and early maturity. Such was its uniform action in Peru, where it enriched the land, and in no case, yet reported, did it ever exhaust. Nor did it seem there merely to increase the stem and leaves of the plant, as apprehended by Professor Liebig, of Germany, who recommended its mixture with the phosphates of Baker Island, to promote the growth of the seed. The contrary is demonstrated by the immense yields of Indian corn, potatoes, etc.

The constituents of Peruvian guano, even of samples taken from the same locality, vary in their wide limits. Not only every cargo, but each lot from it, should be analyzed to ascertain its value. The following analysis of a favorable specimen, is taken from the German Liebig, (German is said because there is an American chemist of the same name of considerable celebrity,) but quoted from the very able Professor Jos. Jones, of Georgia, in his report to the Georgia Cotton Association in 1860:

One hundred parts contain organic substances and ammonia salts	52.97
Phosphoric acid	14.56
Sulphuric acid	2.52
Lime	10.88
Magnesia	0.31
Oxide of iron	0.73
Potassa	1.42
Chloride of Sodium (common salt)	2.02
Sand	1.42
Water	13.67

The ingredients most worth considering are the organic matter and the phosphates—the latter, however, are nearly, if not altogether, insoluble. Prof. Norton gives the following in 100 parts:

Organic matter and ammonia salts	56 to 66
Phosphates	16 to 23

The Chincha Islands of Peru, from which the past enormous supplies of guano have been procured, are said to be about exhausted. And the agent of that government now provides for export a rich guano from the Guanape Islands, North and South. The analysis from these, reported by the British Board of Trade, are as follows:

NORTH ISLAND.

Hygrometric water, (Tench sample,)	18.50
Volatile matters and salts	49.75
Alkaline salts	3.05
Soluble phosphoric acid	0.45
Tribasic phosphate of lime	27.00
Sand and clay	1.25
Ammonia in 100 parts	14.18

SOUTH ISLAND.

Hygrometric water	20.85
Volatile matters and salts	73.50
Alkaline salts	1.35
Soluble phosphoric acid	0.15
Tribasic phosphate of lime	4.90
Sand and clay	1.25
Ammonia in 100 parts	18 82

These results vary as they should necessarily do, for no two things in substances in animate or inanimate nature are precisely alike. Even mathematical truths are not accurate beyond all cavilling or controversy. Chemistry, however exact, only approximates exactness. The two peas which so nearly resemble, under the microscope, are dissimilar to divergence. The twin souls, apparently in harmonious union, of one birth, and of similar physiognomy, differ in thought, principle, and probably in ultimate destination. So of all created matter and existence. To the extent, that Infinite Omnipotence may be humanely demonstrated by the infinite variety of His creation.

It has been the practice among us to bury the guano in a deep furrow, and form over it a high bed. In deference to this universal rule which originated probably in some bell-weather leader—for mankind are a kind of sheep, following arrogant assumption and dictatorial suggestion, without proper self-communing and concentrated thought—it may yet be urged that this should depend greatly on the character of the land. As a general practice, it may be modestly intimated that manures should be placed within a few inches of the surface of the ground. Nature unerringly points out to us the surface roots, as those which imbibe nutriment. The soil, mould, vegetable substance, organic and inorganic remains of decomposition and sub-fermentation, almost universally, is there; the atmosphere permeates and the sunshine penetrates there, and not beyond; and with moisture, which the humus of the soil retains, nutriment to the plant is chemically evolved and supplied. If the land is sandy, with a clay subsoil, deep imbedment will be the best, for there will be ample upper strata to intercept and incorporate escaping gases, and the lower will prevent the loss of salts by reaching beyond the roots of plants. If the subsoil should be porous generally, in addition, there will be danger of loss in both directions, by evaporation of the gaseous parts of the manure,

and by leaching of salts too deep, for the feeding roots of the plant to derive sustenance. With a good composition of both soils, all the elements will be securely held in their mechanical bed, and be granted, when required, to the growing plants. The subsoil is not without great use. To very many vegetables, of large and small growth, it affords necessary support to the tap and subsidiary roots, in order to resist the winds and the storms, while to others, like the clover and the cow pea, whose extending and devouring roots penetrate and imbibe everywhere, it yields certain food, although in moderate degree, in the form of salts of lime, potash, etc.

Guanos have been found in various places besides Peru; within and without the tropics—in the Pacific and in the Atlantic Ocean, in Australia, in the Gulf of Mexico, and on the coast of Africa. Some, like that from Baker's Island, which has 80 per cent. of phosphate of lime, insoluble mainly, of course, are phosphatic, containing a small proportion of organic substance. Others are similar to the Peruvian, but none yet discovered have quite equalled it. All, even the Peruvian, with its and their thousand requisites for plant development, are deficient in superphosphate, the quickly soluble form of phosphate of lime.

Beech Island, S. C.

My Experience with Various Grasses.

"There is nothing new under the sun."

I have been on a grass hunt all my life. When I was in my teens, I spent a summer in the mountains, and was so much taken with the virtues of Red Top, (sometimes called Herds Grass,) that I brought home in my saddle-bags a small parcel. My father, to humor me, allowed me to sow it on the margin of a little meadow he had, and I had the gratification of seeing it take possession of a good many acres of boggy land in a few years, and supply the cattle with an abundance of good grazing winter and summer.

And let me stick in a pin right here. After an experience of forty years, I have found no grass so well adapted to wet soils for grazing or mowing as Red Top. These meadows have long since gone out of my possession, and have been cultivated in corn and cotton, but Red Top still flourishes in many of the nooks and corners luxuriantly.

My next experiment was with Red Clover. I sowed a ten acre field, (which had been set in wheat,) in February, about two gallons to the acre. The field was a mulatto soil, in good heart, but had been regularly cropped for many years.

I got a good stand. It was not grazed for the first year, and for many years afterwards furnished pasturage for eight or ten cattle. Delighted with this success, I sowed twenty acres on the opposite side of the road—soil rather lighter, drier, and not so good. I got a good set, but the second sum-

mer a severe drought cleaned out the clover. Since then, I have tried clover over and again, and found it difficult to succeed, except on rich lots with a good clay subsoil. No crop pays better for the pains taken to grow it, and no farmer, be he ever so small a farmer, should ever think of getting along without a lot of red clover.

About this time quite a sensation was got up on the Gama Grass. The papers were full of its wonderful properties. I tried the Gama, but was soon satisfied it was a humbug.

Lucerne was my next experiment—which I grew successfully in drills, and found very valuable for soiling, but the trouble of keeping out intruders, and of soiling, soon led to the neglect of the lot, and by degrees it disappeared.

In our climate, upon good soil, however, I still think it would pay well on a small scale, if properly attended to. It affords an immense yield of nutritious and palatable green food, and will always offer a "*bonne bouche*" for the cow or the saddle-horse.

My next experiment was with the Wild Rye Grass. Attention was drawn to it first by Dr. James R. Davis, of Fairfield, and it was afterwards introduced to notice by Dr. Terrel, of Georgia, and in that State is known as the "Terrel grass." It is a native grass, to be found growing luxuriantly upon the margins of nearly all our water courses during the winter—goes to seed in May or June, and then disappears until fall. I am not prepared to say whether this is the "*Lolium perrene*" of England, but its characteristics are very similar. I cannot see why it should not be a very valuable grass on moist soils for winter grazing and for hay. It is very hardy, and fights its way during the winter among briars, bushes and weeds. Still I do not know of any one who has succeeded with it.

My next experiment was with Red Clover and Timothy (*Phleum pratense.*) It was upon moist, trappish soil, and a failure. The native fox-tail, wire grass and broomsedge soon whipped it out. Now and then I still see a bunch of Timothy fighting for possession on some favored spot. The fault was mine—the ground was not properly prepared, nor was it adapted to the grass. I have seen very fine Timothy growing upon the rich moist soils of some of our back-country creeks under great disadvantages. It might be utilized.

My next experiment was with the Musquite, a Texas grass, introduced to notice by Col. Wade Hampton. I sowed a small plat of moist land, and was so well pleased with it, that I saved seed, and next year on a moist, trappish soil sowed about two acres. The crop was a beautiful one—about three feet high, and thick as it could stand. I mowed it when in full bloom, and got a fine crop of hay, but that was the last of the Musquite. I learned from Dr. Bachman that it was an imperfect perennial, and therefore could not be relied on to reproduce itself. If I had known its botanical name I should not have been disappointed.

About this time a friend of mine, who lived some twelve or fifteen miles from me, called to see my Musquite, and pronounced it identical with the grass he had so admired in Texas. I gave him some seed, and in a few years

some of my neighbors were in ecstacies over a *new* grass Capt. L. had brought from Texas and had growing about his grounds. Several years afterwards, the same grass loomed up in Edgefield, was considerably ventilated in the papers, exhibited at the State Fair, and sold at extravagant prices. One of my neighbors bought at $5 a peck, only to be disappointed.

It is growing still on moist spots about my farm—is a good winter grazing grass, and much relished by animals, but you must let it *drop its seed* annually.

The Guinea Grass, *alias* Means' Grass, about this time came under my eye, and albeit Mr. Duncan, of Greenville, and other intelligent observers, assured me that they had a variety which would not perfect its seed, I had seen such *splendid* specimens of the Guinea growing *ad libitum* in Mr. Edward Means' Beaver Creek bottoms, and knew that most excellent gentleman's appreciation of its invincibility, that I never had the temerity to test its virtues. If you want grass—*a* grass—*the* grass—and have rich land—this is just the thing to fill the bill.

About this time the Rescue Grass, (*Cenatochlia brevearistata,*) was introduced by Mr. Iverson of Georgia, as "a native of the Pacific coast," coming to us very *mysteriously,* and possessing all the virtues common to grass. It was to restore our exhausted fields, stop our gullies, fatten our poor horses, convert the cows into milk and butter—and only five dollars a peck for seed. Again I went into it hopefully, and came out of it disappointed. It was an *annual,* a good winter grazing grass; not a meadow grass, and not at all fond of poor land or gullies. I sowed it on a peach-orchard, contiguous to my barn-yard, a pretty rich clay soil and kept in good heart by the dropping of animals. Here for many years, it has furnished fine grazing in winter, for hogs, horses, calves, etc. In the spring the stock has been taken off, and the grass allowed to drop its seed. Occasionally I have plowed it up, and I believe the better plan would be to plow it up every spring after the seed drops, and sow down in peas. It might be made to answer a valuable purpose.

About this time, a new candidate for public favor, the "Yellow Clover" appeared, and most extravagant stories were published about it. The seed was sold at high prices, and it was soon set down among the humbugs of the day. It is an annual, (*Trifolium procumbens,*) not a very palatable grass, but very hardy and tenacious; keeps green from October to June, and for hogs, sheep and cattle, furnishes pretty good grazing. It grows well amongst trees, and I am inclined to think would be capital in an orchard. I think it worth trying.

After the Yellow Clover, the great wonder of the world loomed up under the name of the Rocky Mountain grass, under the patronage of Maj. Stanford of Georgia, who doubtless made a good thing of it. I recognized it at once as a grass I had received from a friend who had picked it up in his travels, and was then growing on the borders of the drive in front of my house. The Tall Oat Grass, (*Avena elatior, Lin.**) I advised a friend who had got a small

* The *Arrhenatherum avenaceum* of the later botanists.—Ed.

parcel from Major S., to order a few bushels of Tall Oat Grass from New York. He did so and found the two identical.

Not long after this, I heard some very extravagant accounts of a grass which a North Carolina farmer had brought from Arkansas, and put myself to considerable trouble to obtain seed. I had my suspicions as soon as I saw the seed, but sowed it as directed. It turned out the same Tall Oat Grass; a grass which has been known for a long time, and which, in some respects is valuable.

And now, Mr. Editor, I have run through the gauntlet, giving you my experience in the *main* experiments; for I have omitted a great many "small fry," and I am inclined to suspect (by way of parentheses) that this new candidate, the "Virginia Evergreen Grass," will turn out to be, after all, Maj. Stanford's Wild Injun Rocky Mountain *alias* Tall Oat Grass.*

You are right—it will be better to learn to call things by their right names, even should they be jaw-breakers.

May, 1870. G.

Shade as a Manure.

In a late number we discussed the subject of mulching in its horticultural bearings. The principle involved is as important to the farmer as to the gardener, and may be applied in many ways to his advantage, as we purpose to show at some future time. How it explains some phenomena observed in agriculture and otherwise inexplicable is shown in the following extracts from an article lately published in the *Rural New Yorker*. The writer says:

AN INCIDENT.

There is one thing I learned early in life—the great value of *shade as a fertilizer*. The first incident that called my attention to this fact occurred when I was a mere boy. One fine autumn day, being out in the field where there was a large pile of straw, I noticed a large volunteer squash vine growing from under the side of it. This vine was of a small kind designed for table use, the squashes growing to the size of the two fists. The vine grew from a single stem, and would probably have covered the space of a good-sized room. It had seventy-six full grown squashes on it, besides many more smaller ones. How many of these latter ones came to maturity before frost time I cannot say, as I do not remember to have observed. It was a late vine, for I did not notice it when the oats were harvested in the field around it.

This pile of straw had been thrown upon that part of the field because it was a low place where water stood a good part of the year, and hence the soil was so thin and poor that nothing could ever grow upon it. It had been put there only a year or two before, and was only very partially decomposed—so that the extraordinary change that had taken place in the richness of the soil could not be attributed to the rotting of the straw to any important extent. To what then was it due?

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* Our correspondent is right in his conjecture, as the reader has perhaps observed in our June number.—Ed.

Without doubt, to the fact that the straw had furnished a protective covering to the soil during the drying heats of summer, and thereby had preserved in it the necessary moisture to carry on those important chemical processes, whereby the soil is enabled to attract those peculiar salts and gases from the atmosphere which render it fertile and productive. In other words, supposing the soil and atmosphere to be two parts of an electric battery, a certain amount of moisture is necessary to connect the two poles of it. This needful moisture is furnished by the shade.

CLOVER AS A SHADE.

This is the secret of the success of proper mulching in hastening the growth of young trees.

The practice in some sections of cutting down timber, and letting it lie on the ground from one to two years before clearing and planting, furnishes another illustration. Hence the great value of clover as a fertilizer of poor and worn-out soils. There is probably no other plant in the world of such value to the farmer for this purpose. It furnishes the most perfect protection to the soil during the fierce, drying heats of summer. Being a constantly deciduous plant, its leaves are perpetually falling, and soon form a delicate covering for the entire soil, sufficiently thick for shade, and easily penetrated at all points by the air, which is the great carrier to the worn-out soil of those atmospheric elements that are to enrich it.

In this way the clover plant not only contributes directly to the fertilizing of the soil by giving its own substance to it, but it furnishes a protective covering to the entire ground, which encourages and stimulates those chemical processes by which the hungry and exhausted soil is recuperated from the vast supplies of nutriment that are held in the atmosphere. In this important junction, it stands unrivalled, and becomes to the farmer the most valuable fertilizer in the world, as it does not impart fertility, like most manures, in spots, but to the entire soil, which becomes renovated throughout.

WHY SOME CROPS EXHAUST THE SOIL.

It is partly on account of their greater or less capabilities of shade that some crops tend rapidly to exhaust the soil, while others enrich it. Wheat, by being taken off the ground at the beginning of the heated term, and thereby leaving the soil naked and unprotected, is an exhaustive crop. What should have protected the ground during the heat of summer has been stored away in barn or shock. How often have we gone over the stubble ground, when a boy, after the shocks, having stood two or three weeks, had been removed to be followed by the plow. Although every vestige of stubble had been turned under, we could still point out where every shock of wheat had stood, by the superior richness and color of the soil.

Corn, potatoes and crops of that class, which partially protect during the hot weather, are better. Hemp more nearly approaches the clover in its protective properties, being like it in its deciduous tendencies. It is esteemed a great fertilizer where it is grown. S. A. M.

Value of Rye.—The importance of a crop of rye seems to be but little understood by farmers. It makes excellent feed in the fall, long after grass becomes entirely worthless. Again in the spring, so soon as the snow is off the ground, it makes good pasturage, and may be used as such until the grass is large enough to make good feed; nor does this fall and spring feeding injure the crop for grain.

Facts and Figures for Rice Planters.

Feeling an interest in the agricultural prosperity of the State, and being willing to contribute my mite towards the common weal, I will give you some of the results of my twenty years' experience as a rice planter, confining my remarks chiefly to planting as conducted under our present system of labor.

1st. I will commence with a calculation embracing all the details of a rice plantation, say of three hundred acres, based upon the supposition that the lands are in tolerable order, and that it is stocked with mules, flats, etc.

The first and most important consideration is a good stand; and to secure this no labor should be considered thrown away. The first requisites for this are well drained lands thoroughly prepared, with safe and tight banks and trunks, with *good seed* liberally and carefully put in.

ESTIMATES.

Cleaning big ditches, if not too bad, and the fields do not average less than ten acres—if less, it will take more—if more, less, but say ten acres—the cost of

Three hundred acres will be	$405 00	Tying rice	150 00
Putting mud on bank	250 00	Incidental	50 00
Cleansing qt. drains	200 00	Cleaning barn-yard	75 00
Raising low places on river banks	150 00	Repairing flats	100 00
Overhauling trunks, if not too bad	100 00	Tar and oakum	30 00
Plowing and digging edges	300 00	Harvest rope	30 00
Mule feed	600 00	Mill oil, etc	25 00
Harrowing	60 00	Loading flats	150 00
Levelling after harrowing	150 00	Flatting home	100 00
Trenching and sowing by machine	75 00	Unloading and stacking	150 00
Filling out heads of beds	40 00	Thrashing and shipping	600 00
Covering with harrow	30 00	Seed-rice, 900 bushels, at $2	1800 00
Overhauling after covering with harrow	30 00	One foreman	250 00
Taking off trash	25 00	One assistant-foreman	150 00
First harrowing	150 00	One trunk-minder	200 00
Second Harrowing	150 00	One ostler	150 00
Incidental	100 00	Watchman	100 00
Bird minding	200 00	Tax on property	300 00
Powder, caps, etc	100 00	Incidental	300 00
Cutting rice	220 00	Interest on advances	350 00
Total			$8,445 00

I think any experienced planter will see at a glance that my calculation is full, and that I have made a liberal allowance for all contingencies, and I think it will be found sufficient under ordinary circumstances, if the business is judiciously managed.

The yield on land thus planted and cultivated, a good stand having been secured, could not be less than forty bushels—and perhaps fifty, or more, but say forty bushels, this would give

Twelve thousand bushels, which at $1.25 per bushel would be	$15,000 00
Expenses	8,445 00
Profit	$6,555 00

Now, if the labor is paid for in due-bills made payable at the end of the year, and taken in at the plantation store for supplies, or furnished labor, the expenses can be reduced fully one half; and with the rice cultivator and reaper, if *found practicable*, there would be a still further reduction in the expenses; and with the aid of those auxiliaries, the planter would be enabled to increase his acreage to almost any extent.

There is no use in remaining blind to facts. Rice *has been made* and *can* be *made again*. The negro is not altogether to blame for the want of success, though he does to some extent contribute to it. What is most needed is, a perfect knowledge of the business in all of its details; the extent, value and quality of work, with method and persevering industry. What is worth doing, should be well done, and *no more* attempted than the available labor at our disposal will justify. Free labor is fluctuating and unsteady, and at the best unreliable; and it would be better to plant less to the hand, than over plant and run the risk of loss. Work, well in hand, labor can be controlled, but let it once get ahead of you, and labor has you by the nose.

The question should not be, how much can be rushed into the hand, but how much can be successfully planted and cultivated. One head, if it is a good one, is enough for one crop, and is better than many unknowing ones. Divide responsibility, and no one is responsible; and yet, without responsibility, the interest every man should feel is impaired.

Most unfortunately, it is not every proprietor of a rice plantation who is a rice planter, and the wheels of experience, clogged by inexperience and incapacity, causes everything to work badly.

Let every planter, by all means, if he possesses the practical knowledge, assume the responsibility and direction of his own affairs; but if he does not possess that knowledge, and must plant, the best thing for him to do is, to secure the services of a man that does; and the next best thing is, to have as little to say as possibile.

Don't employ a man as a scapegoat, to shoulder responsibilities you are incompetent to assume, but a free agent, with authority to exercise and employ all of his faculties for the benefit of his employer and the honor of his profession. And my word for it, there is much that is now placed to the debit side of accounts, that would soon find its way to the credit side.

Work well done, remains done, and will not only enhance the value of land, but lessen expenses, increase production, and contribute largely to profits. Whilst the railroad and trust-to-luck system of some must result in ruin.

"Can't afford to do work as it ought to be done?" why, it will cost more to do it as it *ought not* to be done—and this, will not be the worse, there will be nothing to pay for it.

With regard to watering of a rice crop, I will say nothing, as no system of watering can be laid down as a general rule; the character and nature of the lands and surrounding circumstances, can only determine this. But, if the lands are *high* and *grassy*, I should not adopt the hazardous and expensive

pleasure of killing it out by hand, when it can be more easily and effectually done by a timely use of water, and at the slight cost of knowing when to take it on, and when and how to get rid of it; which only an accurate knowledge of the plant, and close observation and experience can teach.

Georgetown, S. C., May 31st, 1870. J. C. M.

Peanuts--My System of Cultivation.

In the April number of THE RURAL CAROLINIAN, is an article on the Planting and Cultivation of the Peanut. As I am an old pindar planter, and differ from your correspondent, permit me to give you my plan.

In the first place, the writer referred to recommends planting after corn. Pindars should never be planted with or after corn, or any other crop but cotton that has been well manured the previous year. Pindars planted after grain crops never fill well. I have planted with corn, and also planted corn late in the pindar field to fill up the missing places; in both instances there was a decided injury both to the corn and pindars. In the last thirty years I have planted pindars in a variety of ways, and find the following to be the best and most profitable:

Run off your rows four feet apart. Now haul on a four-horse wagon load of lot manure upon every twenty rows one hundred and fifty feet long. Spread the manure over the land, and bed up as you would for cotton, with a turn-plow. This should be done as early in the winter as possible. Nothing more should be done until you are ready to plant. Then take a mixture of Peruvian (Chincha Island) guano and gypsum, two parts guano and one part gypsum; and in the old water furrow apply two pounds to the row of 150 feet. Now bed upon it with turn-plow, making a flat bed; then chop lightly and plant two shelled pindars to the chop—chops two feet apart. Eight quarts will plant about eighty rows.

I have made over a bushel to the row, with scarcely any false ones, with the above plan. I have had the vines to measure seven feet across. In cultivating, it is only necessary to keep your beds flat and clean. I cultivate with a sweep and follow with the hoe. In case of a bad stand, take from where there are two, (on a wet day,) and set out in the missing places. In gathering, chop around the bush with a hoe and then pull or fork up; turn the bush over and let them stand out for a week to dry—a rain will not injure them; haul home and you can pick off the bush at your leisure. By running a small sweep in the middle of the row, after taking up the bush, you can gather those left in the ground with more facility.

ZANUM NOSNIBER.

Rowe's Pump, S. C.

A MASSACHUSETTS farmer says he can winter his cows on steamed feed for one-third less expense than on dry feed, and get one-fourth more milk. This is the result of five years' experience.

A Plea for Grass.

The season for sowing grass has passed, and yet I am unwilling to abandon my feeble attempts at arousing the Southern mind to the full importance of preparing and making arrangements for future operations looking to the seeding of grass.

It is a sad sight to travel through the South and see the countless acres of "thrown out" land, which might be made beautiful to the eye, of vast pecuniary benefit, and of real creature comfort to the owner. I do not address my communications to squatters and others, who seek to tax the land to the uttermost, regardless as to the future of those who are to come after. I am speaking to those who have been born and bred on the "old homestead," and who wish to settle their children and their children's children around and about them. I am speaking to those who wish to transmit to coming generations evidences of their thrift and thoughtfulness. I have no words for him who would harbor such a selfish thought as that which would consider present benefits merely and a removal further West when the lands are exhausted. It is distressing to see how rapidly our population—the flower of the land—is seeking far away from the homes of their fathers, among strangers, subjected to many discomforts, the easy prey of Western diseases, and, worse still, Western sharpers, when if they would remain at home, and help to build up the waste places, they would be themselves the gainers, besides contributing so much to the benefit of their native county and State.

The agricultural papers of the South are replete with accounts of experiments made by successful cotton planters. The result is found in the increase of the crop per acre, and a more intelligent system of cultivating the weed, which each year will add to the material wealth of the South.

But so grossly is the subject of grasses neglected, that we scarcely find any accounts of experiments made in growing grasses, when I argue that, to the cotton planter, one acre of good land, well prepared and manured, and sowed down with one and a half gallons of clover seed mixed with one and a fourth bushels of Orchard Grass, will pay better than any one acre of equal fertility planted in cotton.

To say that the two grasses mentioned will not do well in this warm climate, is the grossest of fallacies, while clover in good soil will do better in a temperate climate than it will in a cold climate. I urge upon the cotton planter to devote at least one-third of his tillable land to the grasses—avoid going to the corn-crib to feed his hogs and mules during the idle part of the summer season—and then compare his outlays of two consecutive years in making his crop. And then we must remember that all the cotton produced on any one farm cannot place upon his table *rich* cool milk unless the cattle are well pastured.

And must the cotton planter deny himself the luxury of a fat steak, when it is a fact beyond dispute, that what is known as "scrub stock," when well pastured, make the fattest and sweetest beef. The beef sold in our Southern

markets under the present system of agriculture is positively unbearable, except to those who never saw better. I have appealed to the appetites of our farmers, and now I again recur to the importance of improving the lands by grasses, so as to lure the absent back to green pastures, and to destroy that love of change which the change of fields gives birth to in the Southern breast.

If the prospect is bare, who is it among us that will not seek other scenes. If the sight is pleasing to the eye, and the old homestead has a patriarchal appearance, what boy would care to leave such a pretty landscape.

Again, this mode of producing such a large amount of corn each year to barely subsist the stock, is so much more laborious than letting down the gap and turning in the stock to gather what you sowed. If the South ever expects to recover, she must forget that it ever was profitable to raise negroes; while it is profitable for a farmer to raise all his own stock, which can be done readily and cheaply by employing the grasses, and which cannot be done profitably without them.

Pay no attention to those who argue against the use of grasses. Prepare a good piece of land as well, and make it as fertile as the same amount for cotton, and test the facts I have stated, and you will not be disappointed. I have tried it, and speak from experience. If your land is well manured, pulverized, plowed to the clay, and then subsoiled, sow a mixture of Orchard Grass and clover. If the land is thin, sow Evergreen Grass,* at the rate of one bushel per acre on well pulverized land, and slightly brush it in. It is an exploded idea that small grain sowed with grasses improve the growth of the latter. If you can do so, sow your grass seed alone, and by the time the hot suns come they will have such a start as to shade their own roots, and the strength of the soil is not divided, but concentrated in the grasses. But when this course is pursued, I would suggest the fall of the year as the time to sow—say in the month of October; the latter part of September, perhaps, would be better. If what I have said avails nothing to turn our people in the right path, I will add another good reason as a clincher, and then I will close. It is undoubtedly the fact that the constant use of domestic grasses is the only effectual destroyer of wild grasses and weeds. If the domestic grass sod is turned over to sow in wheat or plant in corn, the crop made on that fallow will be free from wire and other grasses to a great extent. Domestic grasses never annoy the planter in hoeing his crop. MORE ANON.

An Excellent Fertilizer

One of the very best artificial fertilizers used upon our farm, for all the cereal grains and root crops, we have prepared in the following manner: Take one barrel of pure, finely-ground bone, and mix with it a barrel of good wood-ashes; during the mixing, add gradually about three pailfuls of water. The heap may be made upon the floor of an outbuilding, or upon the barn floor; and, by the use of a hoe, the bone and ashes must be thoroughly

* *Arrhenatheum avenaceum*, Tall Oat Grass.—Ed.

blended together. The water added is just sufficient to liberate the caustic alkalies, potash and soda, and these react upon the gelatine of the bone, dissolving the little atoms, forming a kind of soap, and fitting it for plant aliment. In this way, the most valuable constituents of bone can be made immediately available, and the addition of potash and soda aids in the formation of a fertilizer of inestimable value. The water added is not sufficient to make a pasty mass, difficult to dry, but is enough to liberate the strong alkalies from the ashes. This preparation is so cleanly, convenient, and useful, every farmer should prepare as much as possible for his crops during the coming season. A gill placed in a hill of corn will work wonders. It is excellent for garden vegetables, and for all kinds of roots. It must be used in small quantities, or in about the same way as the so-called superphosphates. A barrel of this mixture is worth two of any of the commercial fertilizers, and the cost will be but about half as much. It remains to be added, if the bone-meal and ashes are very dry, four pailfuls of water may be required; but care must be exercised not to have it inconveniently moist. It will be ready for use in a week after it is made. *Pure, raw, finely-ground bone* and the best of ashes should be employed.

We find the foregoing credited to the *Boston Journal of Chemistry*, for April, 1868. The theory of the mixture seems to conflict with the generally received teachings of chemistry on the subject of compound fertilizers, according to which both the ingredients are damaged by the contact and dampening, the ammonia being released and escaping before the fertilizer is applied. But Dr. Nichols, the editor of the *Journal of Chemistry*, who is both a chemist and a farmer, shows his faith in the compound by continuing to make use of it on his own farm, where the corn crop, harvested last fall, as reported in a late number of his journal, *averaged two hundred and ten (210) bushels of ears to the acre!* And this great crop he ascribes to "thorough fall plowing, clean culture, and a handful of the bone and ash mixture in the hill, covered with a little dirt, and the corn dropped thereon." This is very good practice, be the theory sound or not.

Coal Ashes for the Earth Closet.

Mr. A. B. Allen publishes in the *Country Gentleman* his experience in the use of coal ashes (as a substitute for dry earth) as a deoderizer for use in the earth closet. Some experiments of our own confirm those of Mr. Allen, as given below. The fact is a very important one to persons residing in cities, as well as to the neighboring farmers. Mr. Allen says:

When the earth closet first came into use, it was thought the only material suitable to disinfect and render its contents inodorous, was finely pulverized clay. The cost of this, and the quantity always necessary to be kept on hand in the house, not only renders it expensive, but inconvenient, particularly in towns and cities, and in those districts where clay does not abound.

With a view of obviating this great objection to the rapid introduction and general use of the earth closet, I have for nearly a year past been experimenting with various materials as a substitute for comminuted clay, and

find that coal ashes best subserve this purpose, and I presume wood ashes would answer nearly as well. Now here is matter which is found in every household throughout the land, all ready fitted for this purpose, and doing away with all extra expense and trouble in its use. In fact, coal ashes are a great nuisance in cities, and the expense of carting them out of their limits is considerable. By mixing these daily with the fæces, two nuisances are united, forming a rich and inodorous fertilizer, which may be sold at a good price, add largely to our national wealth, and purify every household throughout the land. It would also lessen diseases, especially the much dreaded and often fatal typhoid fever.

Plaster of Paris is an excellent disenfectant for the earth closet, and is very cleanly of itself. But this is somewhat expensive. Charcoal dust is equally good, although objectionable on account of its blackening everything it touches.

The next best thing to clay, coal and other ashes, I think of, is a finely pulverized garden soil. Sand answers tolerably well during the cool months, but in the hot season more or less of the effluvium escapes through its coarse loose texture.

Department of Horticulture and Rural Art.

Strawberries in South Carolina.

In the vicinity of the great markets for fruits, Boston, New York, Philadelphia, or Chicago, the beginning, the height and ending of the season for strawberries are all generally comprised in a period of from ten to thirty days, and the longer time is exceptional. To show that we have a marked advantage in respect of the duration of the season for this delicious berry, I subjoin a few facts of my own experience, and cannot refrain from expressing the hope that the counsel of The Rural Carolinian, at the close of the short article in the May number, relating to "Strawberry Plants from Seed," may be extensively heeded; and thus that my own success in the culture of one variety, may be but one among many triumphs in that direction.

In May of 1867, while clearing up an old garden in Beaufort, I found among the involving spider-like web of knot grass which had usurped the entire surface, eleven sickly looking strawberry plants, five of which had each a tiny blossom or two. It was late, but as we had what was considered a pretty good garden, with abundant unused space, and no plants whatever of any berry species, I decided to set out these forlorn specimens, with very little hope, I confess, of any specially gratifying or successful result. But the entire eleven lived and throve, and bore, perhaps, a dozen Wilson berries in June. Leaving the plants to do their best in the matter of running during the summer, in September I prepared and set a bed thirty feet square—say 850 plants, one foot apart each way. I must here remark, that eighteen

inches is a better space to leave between the rows, as a really thrifty plant wants all the nutriment, as well as space, for light and air afforded by that distance. On the 27th of March, 1868, we had a few plump, nice berries, and by the 7th of April, enough to supply the table daily for five or six persons; or, to bring it to a standard of measure, from one to three quarts, hulled. The family, if disposed, could not have consumed the fruit produced up to about the 1st of June, say two months; and as the products gradually decreased, the last plate brought us well nigh to July—nearly ninety days of strawberries and cream! To secure a succession, I prepared a bed adjoining, or rather several beds; for experience determined it to be most convenient to grow the plants upon narrow beds, so as to have perfectly easy access to every plant, and in September again we removed the strongest runner sets, and covered about the same space of new ground. I might have stated before, that in December, each year, I have covered the beds with a dressing, perhaps two inches deep, of decaying leaves, bedding from the horse-stable, leached ashes, and a slight sprinkling from the fowl-house deposits, which I only remove about the middle of February, and thus secure to the plants immunity from the January frosts, and much necessary plant-food for the succeeding season. Last year the first berries appeared on the old bed some ten days before any ripened on the new; but between the two—for the new plants made up at the end—we revelled in "richness" from the 1st of April until the 1st of July, the berries both in quality and quantity largely exceeding the growth of the previous year. Last autumn the same course was pursued, except that the original bed was left uncared for, to be subverted this spring and used for other garden produce; but the old plants turned in have rendered that square the most thoroughly rich of the whole premises, superseding the necessity of all other dressing.

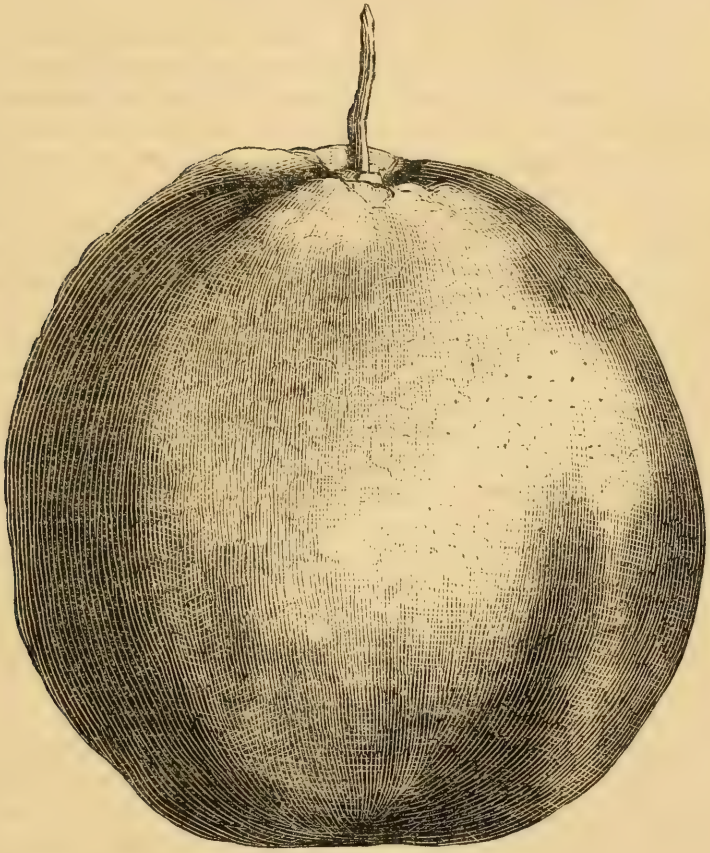
And now we have begun the third season with berries no less excellent; although the backwardness of the spring hindered the first plate until April 20th, or thereabout. Yet I fancy we can safely promise to give a friend strawberries, large, juicy, not over sweet, but as good as any of the Wilson variety, as late as the 4th of July. I have not written all this, dear CAROLINIAN, to draw attention to my garden or gardening, but to present an item of evidence of the capability of what is sometimes reproachfully termed our "barren island soil" to produce in abundance what most people are fond of, and for a remarkably extended period of time. H. G. JUDD.

Beaufort, S. C., May, 1870.

Prof. Newberry, who accompanied an exploring expedition up the Colorado River, two years ago, reports that on the plains bordering that river, two or three hundred miles above Fort Yuma, a species of cactus grows, in some cases, sixty feet high.

FIGS grow very abundantly in South Carolina; they ripen twice a year, and compete, when dried and packed, with the foreign imported ones in the home fruit market.

Volusia Orange.



I believe I can present to horticulturists a new variety of the orange—a variety which possesses many good qualities. It originated near Volusia, Florida, and came from a chance seed. The tree bearing these oranges is quite young, never having yet borne its full crop. The orange seems to be an accidental cross between the wild or sour orange and the sweet or Chinese variety, having the large size, thick rind, and tough, oily skin of the sour, and the rich, highly-flavored, deep-colored pulp of the sweet orange. In taste it is quite sweet, yet with sufficient acidity to make it pleasant. The rough skin is free from warts or other imperfections, the oil tubercules being even throughout, and much raised above the surface; in this respect being so different from the sweet and Mandarin oranges. The fruit is slightly oblong, measuring, on an average, about three and three-quarter inches in height, by three and a quarter to three and a half inches in diameter, and is much flattened at the ends. Color, lemon-yellow; weight, about twelve or thirteen ounces, often one pound. The smell of the orange is delightful, being much more spicy, and the flavor of the pulp much finer, than any other variety

with which I am acquainted. It is hard to bruise—and this makes it valuable for shipping—and it possesses the good quality of being long keeping. I have budded quite a number of young trees with this valuable variety. I believe it worthy of a place amongst the new varieties.

H. G. LUNGREN, M. D.

[*In Tilton's Journal of Horticulture.*

On Southern Seedling Peaches.

The last two seasons the peach crop has been much injured, and I notice that most of the fine peaches have been entirely killed, while many of the seedlings have fair crops of good and perfect fruit.

My attention has been particularly called to this subject this spring, and examinations throughout the blooming season have impressed me with some views not heretofore entertained.

Catalogues of fine peaches were made north of us. These have been adopted by our Southern nurseries, and by importing Northern trees we have succeeded in getting very finely flavored fruits; but these peaches, such as Crawford's Early, George IV, etc., have small blooms, in fact nearly all the finest peaches, now in our Southern nurseries, have small blooms, while we know that all our original Southern seedlings have large ones.

There is a general impression that seedlings are more hardy than the fine budded kinds, for in such disastrous seasons as the last two, they alone have fruit.

As there is a cause for this, let us examine what it is.

When the small bloom is expanded, the stamens and pistil (the essential organs) extend beyond the petals, so as to be exposed to frosts, rains, etc., while in the large blooms they only extend to the outer edge of the large petals. And as some blooms grow on the upper side of the limb, some on each side, and others below, we see the petals protect those not exposed, and it is found this season that the fruit is on the under side of the limb, and those sufficiently protected from rains and frosts.

During two months this spring, with the aid of a magnifier, I examined the effects of frosts and rains.

It was found, after a frost, (and we had several,) that the stamens and pistil of the small blooms were killed, sometimes the pistil alone, while the stamens were not sufficiently expanded to be so much exposed as the pistil, the large blooms hanging down were not hurt, being protected by large petals.

After a rain the anthers (*pollen pods*) would sour, the vitality of the pollen be destroyed, so that no fertilization could take place, though the pistil was uninjured.

It is true many seedlings near the imported trees have small blooms, but in certain localities there are none but the large blooms.

If our Southern nursery-men and fruit raisers will make the effort, we can this year collect the fine Southern seedlings of large blooms, and get a catalogue, promising much greater certainty of crops than from the imported small blooms.

In every seedling orchard are one or more fine peaches. If we make an united effort we can get up a succession through the season, and hereafter seldom have failures. However, we should retain the small blooms till we can supplant them with fine Southern seedlings.

W. B. WILKES.

Aberdeen, Miss., May 10th, 1870.

The Southern Muscadine Grape.

Climbing the tallest trees, covering and almost smothering the smaller undergrowth, hanging over rail fences, hiding pine stumps and brush-heaps, or, for want of other support, trailing on the ground, one may see almost everywhere in the South, from the seaboard of Georgia and Florida to the mountain slopes of North Carolina, the graceful vines of the Southern Muscadine; and, in its season, the ripened fruit, with which many of these vines are laden, will allure the traveller at every turn from the dusty road. Few

who have once eaten this fruit, in its perfection, will be able to resist the temptation to dismount and eat the tempting clusters.

The Southern Muscadine, otherwise called Bullace, Bull and Bullet-grape, is the *Vitis Rotundifolia* of Michaux, (*V. Vulpina* Linn.,) and is very distinct from all other species. Its light-brown slender wood, its innumerable small branches, thrown out tree-like rather than in the manner of other grape vines, and its small, light-green, shining leaves, give it a peculiar and singularly beautiful appearance. The following is a correct description of it:

Stem smooth, light-brown, dotted with white, lithe, tough and without pith; branches minutely verrucose, numerous, slender; leaves small, cordate, (but somewhat rounded, whence Michaux's name;) dentate, sometimes obscurely three-lobed, glabrous, shining on both surfaces; flowers in racemes, composed of numerous small umbels; polygamous, yellow; berries large, black, musky sweet, with a tough skin; flowers in June; fruit ripe in September.

The Southern Muscadine produces its fruit in clusters of from three to eight berries, on small branches put out from all parts of the vine, and, if the soil and other conditions be favorable, is often very prolific. The berries vary in size, from half-inch to an inch in diameter. They are brown-black and shining when commencing to ripen, but a dull black, dotted and sometimes blotched with red when fully ripe. They vary much on different vines, being sometimes hard and sour, but often tender and deliciously sweet. In the best specimens the pulp finally dissolves, and the skins become literally bags of wine. The fruit generally falls from the vine soon after it becomes ripe, but I have seen some vines on which the berries have clung with as much tenacity as in any other species. One season, a few years ago, I gathered bushels of these grapes, out of a portion of which I have made some excellent wine.

Professor Asa Gray, in one of his botanical text-books, (see "Manual of Botany of the Northern United States," page 78,) describes the Muscadine as the parent of the *Catawba* and the *Scuppernong*. The former is a variety of the *Vitis Labrusca*, or Northern Fox-grape. In regard to the latter he is correct.

The Scuppernong is a seedling of the Muscadine, and was found growing wild on the banks of the Scuppernong River, in North Carolina. The wood is a shade lighter than that of the parent, but dotted like that, and the foliage and habits of growth of the plant are mainly the same. The fruit is a pale green when fully ripe, and dotted with brown. It is large, often an inch in diameter, very sweet, less musky than the common Muscadine, and with a thinner and tenderer skin, and is a delicious table grape. For wine, it is superior to all other native varieties, being emphatically the wine grape of America. Unlike other cultivated grapes, it is perfectly free from all diseases, no rot or mildew ever infecting wood, leaves or fruit.

Flower's Grape is a black variety of the same species, and is thought by some to be equal, if not superior, to the white or green variety. It is sweet, juicy and fragrant, and makes a fine wine of any desired shade of red. It

ripens about a month later than the Scuppernong, and does not fall off like that variety. Both are enormously productive, so much so that I hardly dare to state how many bushels of fruit a single vine may bear; but from 2,000 to 3,000 gallons of wine per acre is considered a moderate estimate for a vineyard in full bearing, in which all the arbors are fully covered; that is, when the whole ground is completely canopied with vines.* The vines are planted from twenty to forty feet apart, and trained on arbors made with posts notched on the top, and supporting a layer of common fence-rails. This arbor is extended with the growth of the vine, till the ground is covered. The vines require no pruning, except for the removal of dead branches, or to improve their symmetry. D. H. JACQUES, in *American Naturalist.*

Beauty for Ashes.

Dry earth will completely disinfect and deodorize the most offensive substances, it being one of the quickest and most perfect absorbents of bad odors with which chemists are acquainted. Used for this purpose, its intrinsic value is indefinitely increased, on account of the manurial matter thus taken up, so that it may be made to serve the double office first, of purifier, and, second, of fertilizer. The thrifty housewife will find it greatly for her interest if she has, as every one should have, a flower plot and a vegetable garden in which to imprison thus all flying, unsavory odors, and to apply them, as she has need, during the growing season. They will give her roses a richer bloom, her geraniums a more luxuriant leafage, and on the table she will recognize the protean element in the crispness of her radish, the tender sweetness of her asparagus, and the exquisite flavor of her early peas. Last year, we tried an experiment with liquid manure, the results of which were highly satisfactory. This was the manner of it: A large square box, with holes bored in one corner of the bottom, was fastened up in a corner of the garden, and so inclined that water would run through the holes. Into this box we put a bushel of barn-yard manure, a peck of scrapings from the hen-house, a peck of quicklime, and over the top a peck of wood ashes and half a bushel of chip dirt. In the tub which received the drainage was placed a bag of charcoal dust to deodorize the liquid. On top of this rich and rare collection of manures were thrown miscellaneous slops that were not poured into the sink, and suds on washing day, when not used for vines and fruit trees, enough to keep the receiving-tub always full. This was dipped out every day or two into the watering-pot, diluted and distributed to all the plants in the garden. They grew amazingly under the unwonted stimulus, giving us large returns as a requital for our pains. The box was constantly receiving additions of refuse matter, ashes, lime, and chip dirt, so that all fermentation

*A vine, believed to be the original Scuppernong, and 300 years old, is now growing on Roanoke Island, N. C., which is said to have yielded last year forty-six barrels of wine.

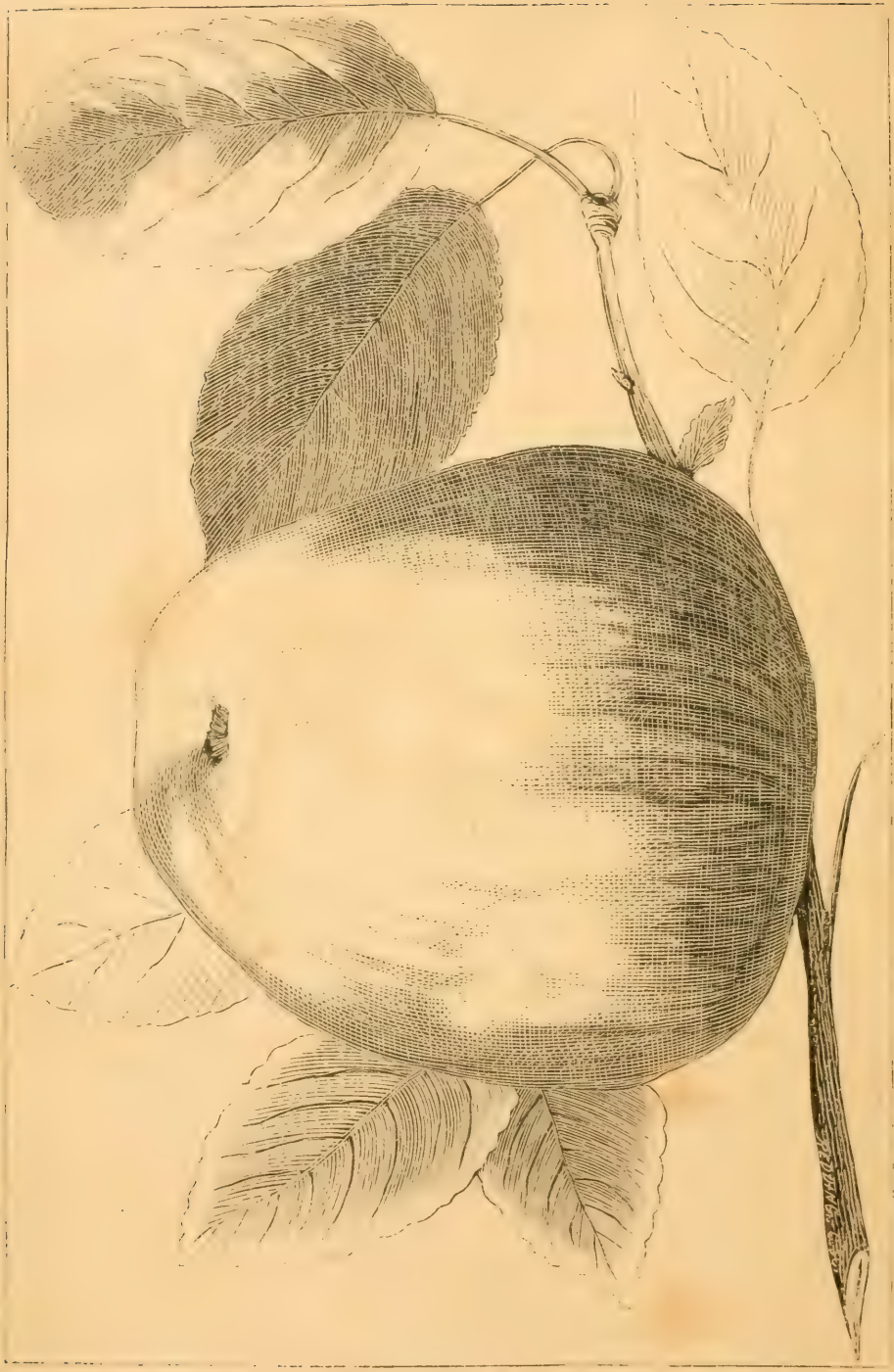
was kept beneath the surface, and in the fall the contents went to swell the manure pile in the barn-yard. This spring we sunk a bottomless barrel under the waste-pipe of the sink, to receive dishwater and kindred slops. Our early peas, radishes, and lettuce have already responded to the applications we make, every fair morning, of this nutriment, dissolved and ready, as it is, for the little rootlets to imbibe at once. In the middle of the garden is a pile sacred to Flora. Into this is thrown all effete matters from the house, where, covered with earth, they await resurrection in verdant leafage and roseate beauty. It is the mine, the bank, the treasure-house, wherein lie untold heaps of purple, and crimson, and golden wealth, which shall gladden our eyes, delight our olfactories, and rejoice our hearts in the summer time near at hand. We value our bank account there so much that we always contrive to have in it a balance in our favor. Old shoes and boots are carefully preserved in an outhouse and planted with vines, fruit trees, or shade trees. Gradually stealing from their prison-house, they regale our palates and increase the grateful shade of noonday walks or eventide repose. No country on the face of the earth supports so many human beings to the square mile as does China. In that "celestial" land the most rigid and faithful returns are made to the soil of all grains and vegetables drawn from it when once they have served the purposes of nutrition. We should certainly learn a lesson from them in this, and thus transmute the causes of typhoid and other fevers into sheaves of golden grain, nourishing esculents, delicious fruits and roses of Damascus.

The Julien Apple.

This is a Southern apple of uncertain origin, but of unmistakable excellence. Fruit, medium roundish tapering to the eye; calyx, small, in a narrow basin; stem, short, in a moderate cavity; skin, thin, yellowish-white, striped and marked with carmine, of a beautifully waxen appearance; flesh, white, tender, juicy, and fine flavored. The tree is a good grower, and very productive. The fruit ripens here from the first to the middle of July. There is no better summer apple, North or South.

Sun-Printing on Fruit.

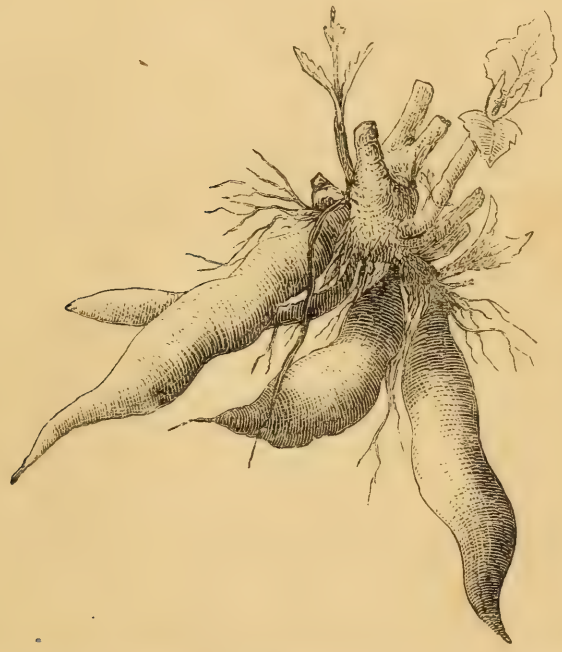
Monograms, initial letters, names or other designs, can be printed on such fruit as apples, pears, or peaches by the action of the sun, with very pretty effect, of either a light or dark color. To do this, draw the monogram, letter or design, on a piece of writing paper, cut it out and paste it with mucilage or glue upon the side of the fruit exposed to the sun. Just before the fruit begins to color, and when the fruit is ripe, and the paper is removed, the design will appear in a lighter or different color to the rest of the fruit; as, for instance, if the experiment is tried on a yellow-fleshed peach with a red



The Julien Apple.

cheek, the design will appear in gold, surrounded with red. If the opposite effect is desired, take a small oval or circular piece of paper, and cut out or pierce the letter or design in it, and paste it on the fruit, which, when ripe, will have the design in high color on a yellow or light-green ground, of the shape of the piece of paper, and this again will be surrounded by the brighter color of the fruit.—*Hearth and Home.*

Novel and Curious Vegetables.



1. *Polymnia Edulis* (Weddell.) Haage and Schmidt, of Erfurt, Prussia, in their List of Novelties for 1870, describe as follows a lately introduced ornamental and edible plant with the foregoing name:

Fine large leaved ornamental foliaged plant, similar to Polymnia Uvedelia and Cosmophyllum cacaliæfolium. Although already introduced for some years into some of the European Botanical Gardens, it has not yet found its way into the trade. It has now for the first time produced seeds, ensuring a general distribution. A native of North Bolivia, it was discovered and described by Dr. Weddell, who, by commission of the French Government, explored that country in 1851. Living plants, however, reached Europe not before 1861, flowering for the first time in 1865, but then too late in the season to ripen seed. This species has tuberous roots similar to those of Dahlias, which, in its native country, attain 12 to 24 lbs. in weight, and represent a much esteemed vegetable. The native Indians eat the roots even in a raw state like apples. Now, if we doubt that in the northern part of Europe it

will suit for general cultivation as a vegetable, there is every chance for its doing so in southern climates—yielding a crop equal at least to Topinambours, and surpassing that in percentage of saccharine matter. The stalks and leaves will, besides, furnish a relishing fodder for cattle. With us, this Polymnia will prove a valuable acquisition to the number of our present out-door ornamental foliaged plants, with the advantage, after having served that purpose, that we shall have in addition a gratuitous supply of roots, which will be a most desirable augmentation to the vegetables now in command for our table.

It will probably succeed well in the Southern States, and may prove a valuable acquisition. Mr. H. A. Dreer, seedsman of Philadelphia, has it on trial, but we do not think it will prove hardy in his latitude.

2. *Banana-Cassa.* A correspondent of the *South-Land* writes:

Some months since, when in New Orleans, I purchased at a fruit-stand, a large cucumber or gourd-like vegetable, (or fruit?) which the dealer in his "Dago" (Diego?) patois, called "Banana-Cassa," and which, he assured me, was "ver' goot fried, same as Banana or Plantain." I kept it until the middle of February, when finding it becoming soft, I extracted from it a large number of seed, similar to those of a watermelon, and had the pulpy portion fried. It was quite palatable, but had evidently "hung too long" to be eaten in perfection. The fruit, externally, resembles a large, smooth-shining, pink or red cucumber. What is it, and what is it good for?

The editor adds that "it grows on a climbing, vigorous vine, and will spread rapidly over a rail-fence, arbor or trellis, and bear a large quantity of its striking and singular fruit. It evidently belongs to the natural order of *Cucurbitaceæ*, or gourd family, though we cannot give its specific name."

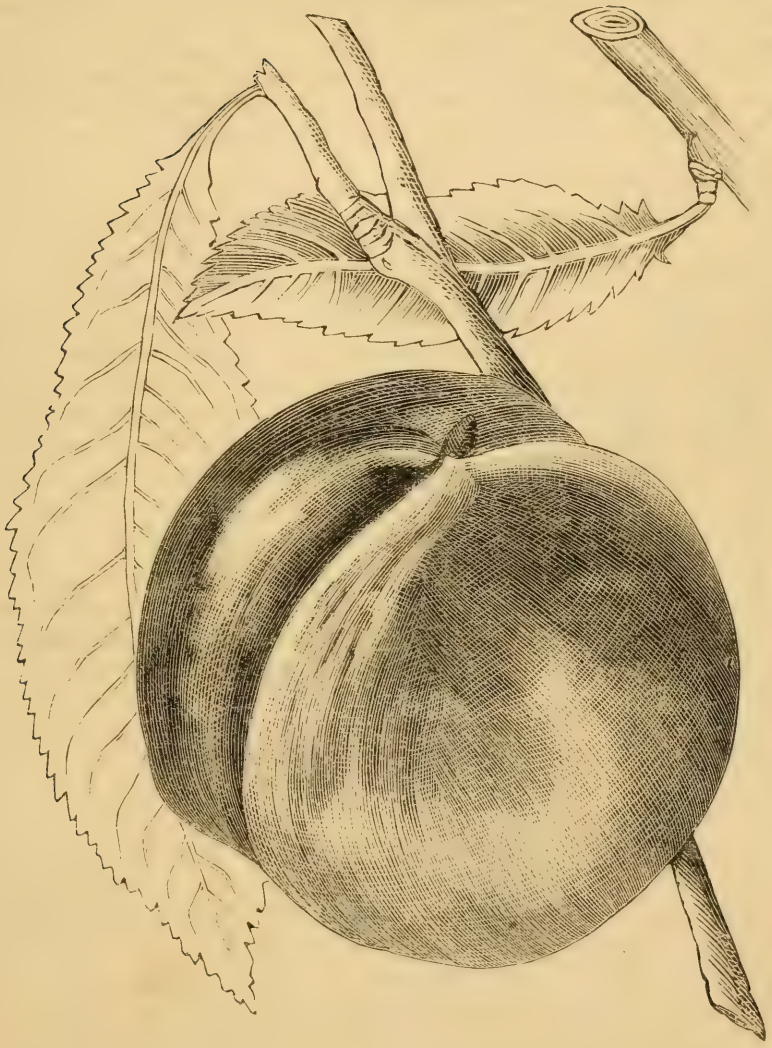
Can any of our readers tell us what it is?

The Catawba and the Scuppernong.

The ill-used and much-abused Catawba, whatever may be thought of it as a still wine, has, by virtue of its excess of tartaric acid, such an affinity, so to speak, for sugar, that if, while yet in the greenness of its first year, it is properly compounded with sugar and ice, a summer drink is made of unequalled excellence. A cobbler of new wine, grown in the valley of the Ohio, or Missouri, where the Catawba ripens almost to blackness, drunk when the dog-star rages, lingers in memory for life. The exile from his native land, whom summer heats overtake, will long for it even on the Rhine or Garonne, whose borders supply no drink to match it; nor can the sherbets of the Orient or *cliquot frappe* make him forget the cobbler that repaired his soul in the Western bar room. For the same reason (its happy mode of combining with sugar) sparkling Catawba, properly made and from choice selections of raw material, is fully equal to the average quality of the Champagne we import. The Scuppernong, too, put up in sparkling form, though in respect to acidity quite opposite to the other, can make as good a drink, to say the least, as Moselle.

W. J. FLAGG.

The Noblesse Peach.



Mr. F. R. Elliott describes this peach as follows:

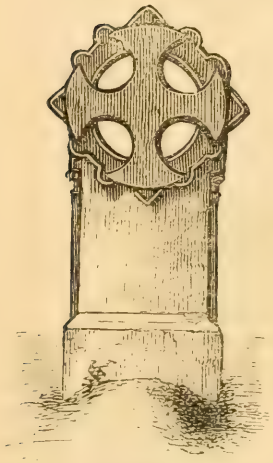
Synonims.—Lord Montague's Noblesse, Mellishe's Favorite, Vanguard Noblest, Double Montague.

Fruit.—Size, above medium to large; form, roundish, sometimes with a hollow at the apex and a small point. Sometimes it is roundish oblong, and the point at apex quite prominent. Skin, pale greenish white, marbled and streaked with two shades of dull red in the sun, occasional faint blotches of red on the shaded side; flesh, greenish white, very juicy, melting with a rich, delicious flavor; stone, large, obovate, pointed, separates freely from the flesh, and without any stain of red; season, early in September.

Tree.—A moderately slow grower at the North, and somewhat liable to mildew when not in good ground. At the South it grows more vigorously, and does not mildew. The flowers are large and the leaves serrated without glands. Originated in France.

The Noblesse is one of the old varieties, whose good qualities have as yet been unsurpassed by any of recent origin. It is of the richest and highest flavor, and being entirely white at the stone, is quite desirable for canning or preserving.

Rural Cemeteries--Inscriptions.



It is a good thing that we now have, in the neighborhood of nearly all our large cities and considerable towns, permanent and decent cemeteries which are never likely to be disturbed and desecrated by "the spirit of improvement," as it is oddly enough called. This new interest and attention to the places of burial has created new interest and attention to the subject of monuments and inscriptions. As respects the latter, there are too many instances of bad taste.

Suppose a head-stone from the accompanying design, or the one presented in our June number, both of which are appropriate and beautiful, marred and their pleasing effect neutralized by an inappropriate, not to say ridiculous inscription. Something like the following, on the contrary, is always suitable:

JOHN THOMAS CHRISTIAN,

THIRD SON OF

EDWARD AND MARY HOPE.

BORN JULY 1, A. D. 1860.

DIED, JULY 1, A. D. 1862.

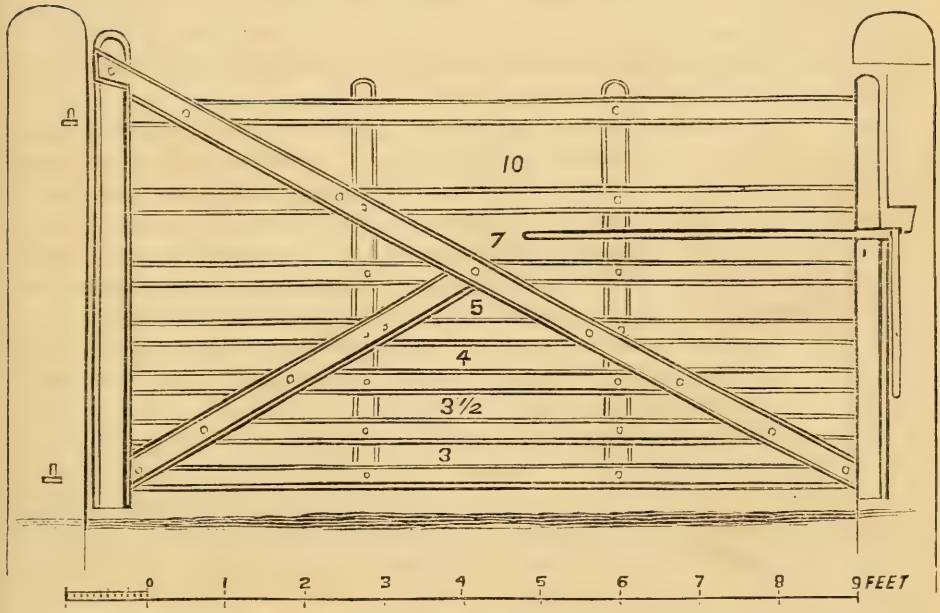
"HE GIVETH HIS BELOVED SLEEP."

Texts of Scripture, expressive of Christian humility and hope are always appropriate. But poetry—doggerel it generally is—should be avoided as offensive to good taste.

Candle-Bearing Tree.—Seimann, according to *Les Mondes*, has the credit of first directing attention to the candle-bearing tree, found only near the River Chagres, on the Isthmus of Panama. The fruit of this tree very closely resembles unbleached wax candles, giving rise to its popular name, *palo de velas* (the candle-tree.) The botanical name is *Parmentiera Cerifera*, and its fruit is eaten by sheep.

Department of Mining and the Mechanic Arts.

Ward's Plantation Gate.



After forty years' experience, I believe my gate, a drawing of which is herewith presented, is superior to any other for the same cost. It will last for thirty years.

Back piece 3 by 6, and about 6 feet 3 inches long; head piece full 3 by 4, and about 5 feet 3 inches long; bars 10 feet long, and, *when dressed*, 4 inches wide and 1 thick, if pine; if oak, they may be *sawed* that thickness; the bars should be morticed square entirely through both back and head piece, and not shouldered. The distance between the bars is indicated in inches by the figures in the cut. Both the cross braces and the two palings are nailed to the bars with the best of wrought nails, with large heads, from the *blacksmith's* shop, three inches long, and well clinched. The two palings are, of course, on the opposite side of the gate to the cross-braces. These braces are of great importance. The long one is dovetailed in the side and near the top of the back piece, passing to the lower bar close up to foot of head piece; the short brace merely butts against the long brace on fifth bar from the bottom and against the back piece on the bottom bar, well nailed to each bar it crosses. All timber for gates should be of the best quality and *thoroughly* seasoned. Better use *bars* than an *indifferent* gate, or even one *badly* hung.

Now, the hanging requires far more skill than the making. It is very rarely well done, even by the best of workmen. If timber is plenty, get the posts 10 by 12 (if scarce, 8 by 10 will do) and 10 feet 6 inches long, and always *four feet* in the ground. If you want to dig your holes with the least possible labor, commence them five feet long and two feet wide, (not as a friend did, eighteen inches square, and took an able hand two days, as he said, to get the dirt out ;) put in the post the gate is to hang to first, and ram well from *bottom* to *top*, taking care the post is plumb; or perhaps it is best to lean it about an inch or two the way the gate is to shut. That much is imperceptible to the eye, and it frequently settles back a little by the weight of the gate, and should it remain just so it is not objectionable.

The hinges should be heavy, and full three feet long, well nailed with large wrought nails to the top bar and back piece, and second bar from the bottom and back piece. A good half-inch bolt and tap is best through the back piece 3½ inches long and *square* at its butt end. A strip three inches wide and about three-quarters thick must be tacked on the bars that the hinges are nailed to, so as to make an even surface from the back piece to the end of the hinge; the lower hinge should project two inches further from the back of the back piece than the upper one, and be bent outward so as to give the gate fall. The lower hook must correspond, as shown on the plate, and must not be driven up as close by about two inches as the upper one. They should be strong shanks made to follow an inch auger, and of the *same thickness* from end to end, not *tapered* like a wedge. When boring for the hooks *slightly incline* the point of the auger to the centre of the post, and bore *entirely through ;* then, should a hook break or be driven too far, it can be driven back with a bolt a size smaller than the hole. Be careful that the gate, when hung, has about three-quarters of an inch between the back and the post. A gate that binds soon breaks itself or the hinges, never shuts well, and is a standing trap for children's fingers. Now, after the gate is hung, put in the head post. I always gutter the head post 3 by 3 (never the other) for head to fall in. It is a great improvement, is safer against stock ; but the same rule applies to this as the other end of the gate ; it should here have full half or three-quarters of an inch play, so it shall not stick.

I use commonly a wood latch morticed through the head piece and nailed to the paling, extending half its length behind the paling. It is very convenient to put the foot on, and decrease the friction on the catch, and, of course, shuts easier. Although the cheapest and most convenient latch made, it is not the safest. Where you have a cunning mule or ox, they frequently learn to open it. I have an iron one that nothing can open without hands, but cannot well describe it.

A catch made out of a piece of scantling 3 by 3, and pinned on the post ; it is much better than the old plan of a wooden pin sloped and notched so as to catch stirrups and traces, etc.

Now posts again : Get good lasting timber, and put the *natural* top downwards, and leave no shoulder at the surface of the ground to catch water and

hold it, nor make any mortice for cross pieces; they will rot there quite soon enough without any assistance. But put on a good coat of boiling tar about two feet long or thereabouts, say a foot in the ground and the same above. I always hang my gates about six inches from the level ground, and then dig up the earth between posts, and add a couple of cart loads of earth that will set hard and raise the ground to within two inches of the bottom bar. The gate will always swing better or clearer of any loose chunks or rocks, and will be clear of a water hole, which is very desirable.

The catch and latch are very important. They should be very carefully made and put on, and should work with as little friction as possible, or the gate will not shut readily. No gate is perfect that will stand at any point you may place it from its closed position, even should it be touching the latch. If you adopt the catch suggested, incline or slope the latch so as to make a very gentle *ascent*, and the latch not bear too heavy.

I have been minute, having had great experience and good practical success. I ask no one to shut any of my field gates after him; I only ask not to *prop* them open. Within twenty yards of where I am writing hangs the first gate I had made on this plantation, hung in 1836, over thirty-four years ago, and you could not tell it had been there over six months by its appearance; and yet it opens into the wood yard, and thence to the orchard, kitchen, etc., and is opened and shut daily from twenty to forty times. It has had about four coats of white lead. It is the best of economy to paint two coats when new, and one every three years afterward.

I would recommend any planter who *intends adopting* gates to get lumber enough for forty or fifty gates at once, put it in lofts and get it well seasoned. I keep mine in a negro house loft, always enough to cover the joists. If you have any to spare, careless neighbors will willingly pay you double price for it.

Bill of Lumber for Twelve Gates.

60 bars 4½ inches wide, 1¼ thick, and 20 feet long.
6 scantling 3 by 6 and 12½ feet long.
6 " 3 by 3 and 10½ " "

If the lumber should be oak, the bars may be one inch thick; all other proportions the same.

Yours respectfully, R. WARD.

Edgefield District, S. C.

An Experiment in Underdraining.

In 1857, I purchased a tract of land containing a bottom of twenty acres, through which flowed two streams, that by their junction formed an irregular Y about midway down the bottom. The streams had no permanent channel, but seemed to run at random through the bottoms, which were entirely submerged by an ordinary rain. Willows, briars, button-bushes, bullrushes, and promiscuous vegetation covered the bottom, which had been used simply

as a pasture for many years, because when attempted to be planted, the crops were invariably washed away. I determined this land should be made available for crops, and hence cleared it of its pithy growth in the spring of 1858.

During that summer every time the bottoms were overflowed, I would ride into them (oftenest while the rain was falling) armed with long sharp sticks, four or six feet long. These I would stick into the ground firmly wherever the water seemed to flow most rapidly, probably twenty yards apart. By fall I had a row of stakes through both limbs and down the leg of the Y, which showed me where the ditch was most needed, and, strange to say, it was oftener than otherwise away from the irregular course of the two streams.

A straight line was drawn through the direction indicated by these stakes, and five professional ditchers (Irishmen) employed to cut the ditches; two of them were eight feet wide and three feet deep; below the junction the ditch was eleven feet wide and three feet deep; *the dirt from all the ditches was thrown on the same side of each ditch.* This precaution is necessary in ditching all bottoms, for if the ditch overflows the crop behind the bank is protected.

When these main drains were completed, ditches three feet wide and three feet deep were cut at the foot of each hill adjoining the bottoms to protect them from rain-water from the hillsides. These ditches were run with the level, beginning at points below where I wished the hillside water to find its exit, and giving them a gradual ascent up the streams of about two inches in twelve feet. Before this much of the work was done, the main ditches had washed out at least a foot deeper on an average.

The wet spots, which were numerous, had now to be looked after. From the nearest point of their edges to the main ditches, very narrow and deep ditches were dug, always as deep as to the bottom of the main ditch. These narrow drains were projected into the heart of these sour spots, and three times in five the ditches would strike the "boil" or "bubble," which was the source. Once a fine spring was discovered, a gum placed around it, an underdrain constructed to carry off the stream, and to this day that spring affords water to the hands working the land.

In the bottoms of these drains, (generally four feet deep,) plank were laid, and about two feet of small, white flint stones, thrown carelessly upon them. The plank were necessary to prevent the stones sinking into the mud, or the mud from rising among the stones. A plank was again laid on these stones and the dirt thrown back upon it. In a fortnight these soured spots were as dry and friable as any portion of the bottoms, and a small stream of water was trickling from the mouth of each one of them into the branch. Soured or wet spots can never be drained and rendered productive by means of open ditches, simply because the action of air, heat and light upon the open sides render it impervious to water, and, consequently, no drainage is thereby affected; hence the necessity of concealed drains.

My neighbor below me ditched his bottoms, which made my ditches draw so well, that in a few years my large banks were levelled down, and the crop was cultivated to the very edge of the ditch. Some of these underdrains are

still working beautifully. Others of them have clogged up, doubtless by the decaying of the planks, and those spots are as they were in 1857, and, perhaps, they will continue so to be, as the prevailing system of contracts renders it a little unprofitable for both employer and employee to assume the cost of reconstruction. D. W. A.

Artificial Stone.

In these days of progress when steam is substituted for horse power, and machines made to do everything but talk, it is difficult to keep pace with the inventions of our people. Many so-called inventions are simply improvements, which denote the progressive tendency of things; but the manufacturing of stone, it occurs to me, must be an invention, an originality, and yet it is done by the wholesale in the City of New Orleans.

Clean sand, pure silex, is mixed with certain chemicals, and in the consistency of mush, is poured into moulds of any shape, size or design, just as the molten metal is moulded to make castings of iron or brass, or other metal, and allowed a certain time to dry off and become hard; and when taken from the mould is as heavy, compact and durable as granite itself. In this way building stone, door and window frames, monuments and tombs, and pannels of fencing are made more cheaply than either hewn stone or cast-iron.

That it is durable, may be concluded from what I saw. A piece of this stone was heated to a white heat, taken at that heat from the furnace and plunged into cold water, and did not disintegrate. Though yielding a little to pressure when warm, it became as hard as bone when cold, and was so compact, that a nail could not be driven into it.

Where in the South can the raw material be more cheaply found than in the vicinity of Charleston and Columbia, and what two cities in the world are more in need of building material? Why cannot a company be formed to introduce this enterprise into South Carolina? D. W. A.

American Wines.

The same conditions which produce good apples and peaches can produce good grapes. Diversity of soil and climate will give diversity of product; warm sunbeams, clear skies, and a dry atmosphere will ensure sweetness and flavor in the fruit, and richness, body, and bouquet in the wine. In most of our varieties there is an excess of flavor to be tempered down by cultivation. Many of them are superabundant in sugar, while others yield a juice whose color is so deep that it too might be deemed excessive, if it were possible for wine to be too red. And if the musky flavor of the foxes is by many disliked, be it known that the important family of frost grapes, *Vitis æstavilis*, have none of it whatever, but only such delicate bouquet and savor as the most fastidious European taste may accept. With such materials we must be poor cultivators indeed if we fail soon to produce something better than what Europeans now send for our drinking, and in time something equal to what they keep for their own.—*Harper's Magazine.*

Stock and Natural History Department.

The Mule.

The Philadelphia publishing house of Messrs. Claxton, Remsen & Haffelfinger, have recently issued in neat style a work of one hundred and seven pages, by Harvey Riley, Superintendent of the Government Corral at Washington City, styled, "A Treatise on the Breeding, Training and Uses of the Mule." The publishers have done their work well; but the author has not been quite so fortunate in telling others "what thirty years' experience in the use of this animal" has taught him. The reader rambles through the "Sherman mule," (a title not excessively palatable to Southern minds,) provoked at its lack of system, order and arrangement, but repaid by occasionally catching a practical idea of much value. These ideas I propose linking together for the benefit of the readers of THE RURAL CAROLINIAN.

Mules are unnatural animals, and, with very few exceptions, are born kickers; but kind treatment is often an effectual antidote to this malicious inheritance, and though correction is necessary almost from birth, it should never be resorted to with the mule colt until he is well bridle or halter broken. No wire bit should be used in breaking a young animal, but a bit one inch and seven-eighths round, and five inches between the rings. When first broken to harness (which should not be until he is four years old) a young mule should never be reined up, as no good can result from it, beyond making the animal look better; and if allowed to carry his head in a natural position, he will work better, pull better and wear better. Constant reining up creates slow motion, which results in laziness; and one lazy mule will spoil a whole team. Too early breaking is often the cause of the slow, lazy gait which is ascribed to the nature of the mule.

The author says, "During the first twelve months of the war I had charge of a hundred and six mule teams; and while not one solitary mule as high as six years old gave out, I noticed the three year olds often became so leg-weary they were scarcely able to walk, and would often refuse to eat, while the older mules were bright and brisk, and able to eat their forage when they came to camp. More mules die between the ages of two and four, when broken young, than between four and ten when kindly cared for until after four years of age."

Color has much to do with the value of a mule. The deepest colored of any particular color are generally the best. The white mule is the least hardy, though an iron-gray is almost invariably a serviceable animal. Cream mules with hair, mane and tail, all of the same color, are frail; but those with black mane and tail, striped legs, and a black stripe across the shoulders and the back, are more hardy and more apt to resemble the jack than the mare. Pintos, or spotted mules, are the least valuable of their race.

For the saddle, mules are inferior to horses in both gait and speed. No mule has ever trotted a mile in three minutes, nor can they endure rapid driving like the horse. The mule naturally travels slowly, but steadily, and can never perform as much work as the horse under similar good treatment, simply because he is less powerful. All good judges of road and trotting horses like to see a strong bone in the leg. The mule has too small legs for his body, has poor muscle, and is often cat-hammed. Mare mules are better for team purposes, more safe and trusty under the saddle, and less liable to get stubborn than horse mules.

This latter idea prevails generally among planters. Riley thinks *cæteris paribus*, there is a difference of fifteen dollars a head in favor of the mare mule, and assigns as a reason, that she is entire in her natural faculties, while the horse mule is not. If this be a valid reason, why should not a mare be more valuable than a gelding, or a cow than a steer? My experience is, sex has much less to do with the value of a mule than the feeding and grooming. Horse mules are stronger but perhaps more liable to become stubborn than mare mules, and at certain seasons of the year are much more easily kept in working condition.

The author will not be gainsaid when he asserts, the most disagreeable and unmanageable animal in the world is a stud mule.

Young mules pastured for a few days with a mare, especially a white or gray mare, will follow her any and everywhere, through fields and forest, and would venture to swim a river to reach her.

Riley says, the United States Government suffered in one respect, as did the Confederacy during the late war. "There were many instances where a team of mules were found, of a morning, over the remains of what had been the evening before, a government wagon. When two or more have been kept tied to a wagon they have been known to eat each others' tails off to the bone, and yet the animal thus deprived of his caudal appendage did not evince much pain." In the succeeding paragraph he says, "in the South many of the plantations are worked with mules driven by negroes. The mule seems to understand and appreciate the negro, and the negro has a sort of fellow feeling for the mule; both are sluggish and stubborn, and yet they get along well together."

Work animals should have every portion of the harness fitting comfortably. The bridle and throat-latch should neither be too short nor too tight, for one will ruin the mouth and head, and the other the mind. The collar should be just long enough to enable the driver to pass his open hand easily through between it and the wind-pipe; and if it pinches at all, should be put in water the over-night, and a few moments wearing the next morning will give it the exact shape of the neck. Dry, hard leather collars should never be scraped, but washed thoroughly in warm soapsuds and then oiled.

The barbarous practice of holding a mule's ears with the tongs or twiches, when attempting to shoe, harness or break the animal, should never be resorted to. Refractory mules can best be overcome by the lariat. Let the ears alone. Don't handle them at all.

The publishers have illustrated this work with the engravings of six mules now working in Washington City, (1867,) four of which were in Gen. Scott's wagon train, in his "on to Richmond" march in 1861, and served throughout the war, "frequently without a bite of hay or grain for four or five days, and nothing to eat but what they could pick up along the road; and there are instances where they have been twenty-four hours without a sup of water."

The diseases of the mule are similar to those of the horse, though he suffers less from lack of sensibility. Distemper is peculiar to young mules, and it is surely fatal if not properly treated. A warm dry stable, plenty of common salt, dry bran mashes, and the use of the lancet, if ulceration occurs, is all that is needed to effect a cure. Colds seldom attack young mules. Glanders are incurable with mules as with horses. Mules do not cut all their teeth till four years old, and should be used but little until of that age, for they suffer as do children while teething. Mules seldom go blind from naturally weak eyes, but often from bad treatment. Saddle and collar galls can best be cured by rest and cold water. "Sitfasts" should be pulled out with pincers, kept clean with warm water and soap, and greased when beginning to heal. Chest founder is seldom seen in a mule. Any lameness in front, nine times in ten, will be found in the feet. Bleeding should never be resorted to. Colic will be aggravated by whiskey or stimulants, but relieved by a drench of two ounces of saleratus in a pint of water, or a drench of strong soapsuds. Any alkali will neutralize the gas that causes colic. Stringhalt, spavin and ringbone, are all evidences of permanent unsoundness. Scratches may be cured by cleansing with castile soap and warm water, and rubbing with an ointment of powdered charcoal, two ounces, lard or tallow four ounces, and sulphur two ounces. Well littered, dry and clean stalls, will prevent scratches ever occurring on the farm, and roadsters should have the mud rubbed off their legs after it gets dry.

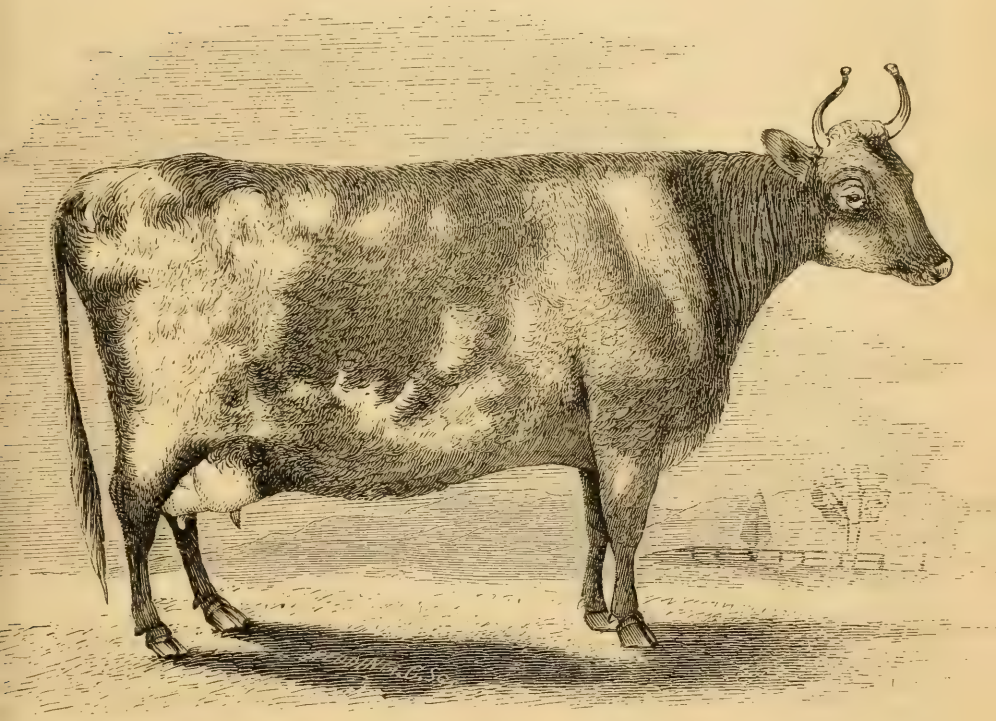
Mules' shoes should be light and without caulks, and the hoof never cut, but the sole simply rasped level to secure a close fit. Two nails on each side, one inch from each other, and all "forward of the quarters," and one nail directly in front of the foot, (?) will never tear the foot, and are sufficient for a close-fitting shoe. Nails should be small and driven well up in the hoof, as it is just as thick to within an inch (elsewhere, he says, "half an inch") of the top as it is at the bottom, and generally sounder and of a better substance. Never cut the frog of the foot. If it projects beyond the shoes, so much the better, "it will catch the weight on an elastic principle."

Horses and mules should stand upon clay floors. Plank floors extract moisture from the feet, and are, therefore, injurious.

The author of the "Sherman mule," leaves his work in part unfinished, inasmuch as he says nothing about feeding and longevity. In my judgment, three times in five a closely built, compact mule, gently broken, comfortably stabled at night in a dry, clean, *scentless* stall, watered three times a day with pure water, (not from a mud hole,) and fed as often on green barley during the spring, threshed oats and rye in the summer and fall, and corn or peas

during the winter, with a plenty of dry forage as a distender at each meal, will do three hundred and thirteen good day's work each year, and outlive the man who first bridled him. Let some of our readers try the experiment, *verbatim et literatim.* D. W. A.

Which is the Best Breed of Cattle for the South?



An Ayrshire Cow.

This is still an open question, and we do not state it here for the purpose of discussing it, but simply to call out such facts bearing on it as the experience of our correspondents and readers in different parts of the country may have established.

English cattle breeders divide cattle into two general classes—"beef breeds" and "milk breeds," and endeavor to develop in each the highest degree of its peculiar quality. Prominent among the "milk breeds" is the Ayrshire, which originated in the county of Ayr, Scotland, within the last half century. Now, as we in the South, in most cases, want *milk cows* rather than cattle for beef merely, the Ayrshire breed commands itself to us at once as having at least one of the requisites for suiting us; but how do they with-

stand our somewhat trying climate? What has experience taught in regard to their fitness for our purposes? We want the facts from those who have sufficient practical knowledge of the breed to entitle them to be heard on the subject.

Ayrshire cattle were first imported into this country more than twenty years ago, but not till lately have they become sufficiently numerous and widely distributed to test their adaptability to our climate.

In regard to the milking qualities of this breed, Prof. Low, of England, says: "Healthy cows in good pasture give from eight hundred to nine hundred gallons of milk a year." The milk is rich as well as abundant—a very important point to butter makers. An imported cow on the farm of E. Pinney, Esq., of Lexington, Mass., is said to have afforded sixteen pounds of butter a week for several weeks in succession.

Dr. M. W. Phillips, of Mississippi, editor of the *Southern Farmer*, says: "I have had some knowledge of the various stock in use prior to 1861, and I had arrived at the conclusion that, as a faithful sentinel, I was compelled to advise the Ayrshire as, all things considered, the stock for the sunny South."

The Kerry Breed of Cattle

In our April number, we gave a portrait of a fine Kerry Cow belonging to Arthur W. Austin, Esq., of West Roxbury, Mass. Mr. Austin kindly sends us the following account of the breed, copied from that scarce and valuable work, Low's "Domestic Animals of Great Britain:"

The native breeds of Irish cattle may be divided into those of the mountains, moors, and bogs, and those of the richer plains, with intermixed breeds resulting from the union of different races, foreign or native. The mountain breeds approach to the characters of the ancient White Forest breed in a sufficiently near degree to indicate a common descent with the cattle of the mountains of Scotland and Wales, and the high lands of Devon.

Of the native breeds of Ireland, one very peculiar and well defined is derived from the mountainous country of Kerry, the most westerly land in Europe, and remarkable for the humidity of its climate. The Kerry cattle of the mountains are generally black, with a white ridge along the spine, a character agreeing with the account which older writers have given of the Uri of the woods of Poland. They have often also a white streak upon the belly, but they are of various colors, as black, brown, and mixed black and white, or black and brown. Their horns are fine, long, and turned upwards at the points. Their skins are soft and unctuous, and of a fine orange tone, which is visible about the eyes, the ears, and the muzzle. Their eyes are lively and bright, and although their size is diminutive, their shape is good.

These cattle are hardy and capable of subsisting on scanty fare. Although stunted in size when brought from the bogs and steril pastures on which they are reared, they make a wonderful advance in size, even though several years

old, when supplied with suitable food. The fat of their beef is well mixed with the muscular parts, or, in technical language, marbled; and they fatten well in the inside, a character which renders them valuable to the butcher, and distinguishes them in a remarkable degree from the long-horned breeds of the lower country.

But the peculiar value of the Kerry breed is the adaptation of the females to the purposes of the domestic dairy. In milking properties, the Kerry cow, taking size into account, is equal or superior to any in the British Islands. It is the large quantity of milk yielded by an animal so small which renders the Kerry cow so generally valued by the cottagers and smaller tenants of Ireland. She is frequently termed the Poor Man's Cow, and she merits this appellation by her capacity of subsisting on such fare as he has the means to supply.

This fine little breed has been greatly neglected. Scarce any means have been used to produce a progressive development of form, by supplying proper nourishment to the breeding parents and the young, and no general care has been bestowed on preserving the purity of the stock. In almost every part of Ireland the breed has been crossed with the Long-horns, and a great proportion of the cows of the country known under the name of Kerries are the result of crosses of this kind, and so have deviated in a greater or less degree from the native type, and almost always for the worse.

A few honorable exceptions, however, exist to this too general neglect of the mountain dairy breed of Ireland. One attempt had succeeded to such a degree, as to form a new breed, which partially exists with the characters communicated to it. It has been termed the Dexter Breed. It was formed by the late Mr. Dexter, agent to Maude Lord Hawwarden. This gentleman is said to have produced his curious breed by selection from the best of the mountain cattle of the district. He communicated to it a remarkable roundness of form and shortness of legs. The steps, however, by which this improvement was effected, have not been sufficiently recorded, and some doubt may exist whether the original was the pure Kerry, or some other breed proper to the central parts of Ireland now unknown, or whether some foreign blood, as the Dutch, was not mixed with the native race. One character of the Dexter breed is frequently observed in certain cattle of Ireland, namely, short legs, and a small space from the knee and hock to the hoofs. This has, probably, given rise to a saying sometimes heard, of "Tipperary beef down to the heels." However, the Dexter breed has been formed, it still retains its name, and the roundness and depth of carcass which distinguishes it. When any individual of a Kerry drove appears, remarkably round and shortlegged, it is common for the country people to call it a Dexter. Amongst the successful cultivators of the dairy breed of Ireland, ought to be mentioned the late Bishop of Killaloe He seduously endeavored to preserve and improve a breed which he conceived to be so useful to the peasantry of Ireland; but his example has scarcely spread amongst other breeds of the country.

The Kerry cows afford admirable first crosses with the short-horns, Herefords, and the larger breeds. Of these crosses, that with the short-horns is the most general, and appears to be the best. The crosses are found well adapted to fattening, as well as to the dairy, and the profit from this system is so immediate, that it is to be believed that it will be more largely resorted to than a progressive improvement of the parent stock.

Nevertheless, the cultivation of the pure dairy breed of the Kerry mountains ought not to be neglected by individuals or public associations. The breed is yet the best that is reared over a large extent of country, from its adaptation to the existing state of agriculture, and to the humid mountains and bogs in which it is naturalized. Were it to be reared with care in a good district, the form would be gradually more developed, and the Kerry breed might then bear the same relation to the mountain breeds of Ireland, which the Castle Martin does to those of Wales, or the West Highland to those of the North of Scotland. The figure in the plate will show a considerable resemblance between the Kerries and North Devons; but the two breeds are very different in size and form. They are distinguished also by the adaptation of the Kerry breed to the dairy, for which the other is imperfectly suited. A painting of a bull of the Dexter variety of the Kerry breed is in the College Agricultural Museum, which may be regarded in most of its points as a model of form.* A. W. A.

The Curculio Caught at Last.

We publish the following extract for what it may be worth, and with the hope that it is worth a great deal. Is it possible that we have at last an easy and practicable way of dealing with the "little Turk," which may result in the utter extermination of the race? The news seems too good to be true; and the discoverer makes no secret of it, and has no patent. The credit of originating the new mode of warfare belongs to Mr. Wm. B. Ransom, of St. Joseph, Michigan. It has the merit of simplicity at least, and everybody who has an orchard can try it. Here, in brief, is the way the thing is done:

"Put the orchard in the best order; level down the soil about the root of every peach tree, and smooth a circle for a diameter of two and a half feet from the tree as a centre. Have the ground very clean around the base of the tree. Do not leave a single hole next the tree. Leave no place where the curculio can hide except under the shelter you provide. *Now lay close to the tree, and close to the ground*, about four pieces to a tree, either chip, or bark, or board, or lath, or rag, or corn-cob, or old leather, or anything for a covert.

* The late edition has not the last two paragraphs.

"The curculio will conceal itself under this shelter, and may be destroyed by the thousands. Go around every day and turn over each chip, kill every curculio. They will generally adhere to the chip, but may often be found on the ground under the chip."

The following additional particulars are furnished by our Western exchanges:

"In the fall the curculio seeks a warm and safe shelter to hibernate. This is either the ground, or leaves, stumps, logs, old fences, woods and other congenial places of concealment. The first warm day in spring that starts vegetable life calls the curculio forth, and it proceeds to its feeding and breeding ground. They walk very fast, and they fly and feed generally at night, eating the young and tender leaves.

"The first warm days this year they fed, then the weather fell cold, and for a week Mr. Ransom found no indication of their feeding. Since Friday night, the 13th, the weather warm, the curculios have been feeding. They scatter all over the tree to feed, and come down towards morning and as late as 7 A. M. to hide.

"They crawl on cold days and nights, and hide under the shelter of the trunk of the tree waiting to feed, then the nights become sufficiently warm. The curculio uses the green peach only to hold its eggs. It sometimes eats the ripe peach, also blackberries, quinces and other fruits.

"By this method Mr. Whittlesey killed 2,715 curculios about the roots of two hundred trees on the 15th; in four hours, under the same trees, he killed 1,566. In three small orchards, Mr. W. and Mr. Ransom destroyed upwards of 5,000 in five hours. In four hours, in his own orchard, M. R., 2,109, by actual count. The peach-growers of that region are called upon to unite in ridding the orchards of the pest thus early in the season, and thus save the crop, which is now so threatened with destruction."

Spanish Merino Sheep for the South.

In the year 1847 I purchased a farm in Gordon County, in order to try sheep raising in connection with other stock. I obtained a flock of one hundred selected native ewes. They proved to be unprofitable, subject to disease, and not calculated for keeping in large flocks. I disposed of them after a three years' trial, and purchased at high prices specimens of the improved English breeds, including the Cotswolds, Leicesters, New Oxfordshires and Southdowns. I bred them pure, and crossed them with the native sheep. The result was neither profitable nor satisfactory. They appeared to thrive well for a year or two; they then gradually became unhealthy, more especially during the summer months. In the year 1859 I purchased a flock of pure bred Spanish Merinos, and from that day to this I have been remarkably successful. My flock has increased to upwards of three hundred head, and I desire to increase it to a thousand head. They have continued perfectly healthy, are easily managed, and yield annually an average of seven to eight pounds of wool per head. Until I adopted the Merinos I could seldom find in my flock a sheep fat enough for mutton. In April last I sold to the butchers in Atlanta a lot of grass-fed two-year-old wethers, pronounced to be

the best mutton brought to the city during the season. I obtained for them $6.50 per head after being sheared.

The cross between the Spanish Merino and the native sheep has been tried by a number of persons in the Southern States, and all agree as to the superiority of the half-bloods as compared with the native sheep, both in the quantity and quality of the fleece, and in their size, vigor and rapidity of growth.

RICHARD PETERS.

Atlanta, Georgia.

Department of Agricultural Geology and Topography.

The Mississippi, its Waters, and New Orleans.

The "Valley of the Mississippi" is an area of country sufficiently extensive and fertile to grow the raw material that feeds and clothes half the civilized world. And that great river, which, as a mighty sewer, receives the drainage of this vast domain, is a stream wonderful to contemplate. Rising in the regions of almost perpetual cold, flowing with rapid current virtually "up hill" for thousands of miles, and receiving as its tributaries other large rivers, it empties a magnificent body of water into the Gulf of Mexico, at a point several hundred miles farther than its source from the centre of the earth. Its course is as tortuous as any mountain rill, and its banks are often so chafed by its current as to become dislodged at one point and deposited at another, perhaps just on the opposite side, thus impoverishing one planter while it enriches another.

Pliocene spectators, if any there were, probably saw this majestic stream emptying itself in the vicinity of Memphis. As time rolled on, so did the Mississippi, disgorging itself of those muddy deposits, which by the vibratory ebbing and flowing of the waters of the Gulf have formed that great alluvial basin comprising the States of Mississippi, Arkansas, and Louisiana. Through this detrital mass a channel had to be preserved, and from combined causes, such as sudden melting of the snow in Northern latitudes, or general heavy rains along its course, "the Father of Waters" overflowed its banks, and made contiguous deposits of the insoluble matter hurried along in its current, thus elevating the banks of the river and the adjacent territory higher than the surrounding country; consequently no tributaries enter the Mississippi River between its mouth and a point several hundred miles above New Orleans. Rain water falling within twenty feet of the river's edge finds its way to the Gulf otherwise than through the mouth of the Mississippi.

At New Orleans, the water of the river is opaque, if not turbid, and though uninviting to the eye, is exceedingly palatable to the taste, and has for all time been pronounced pure and wholesome. Chemical analysis of this water

proves its opacity results from the presence of minute particles of silica, and the only other foreign substances it contains are common salt and carbonate of lime, and these in such small quantities as to be "rather beneficial than deleterious to animal life." At Memphis, perhaps, an analysis would not produce a similar result, for at that point and above, the tributaries flowing into the river bring with them all the component elements of spring water and surface drainage, which, though held in solution, may be injurious to animal life. From the point where the last tributary is received, down to the City of New Orleans, (a distance of several hundred miles,) this immense volume of water is rolled along, commingling its various ingredients, combining those that have an affinity for each other, depositing those that are insoluble, setting free the noxious gases, and thus purifying itself sufficiently to furnish for that splendid city a supply of water unequalled in its purity by the water of any aqueduct in the world.

General Bragg, the efficient superintendent of the water works in New Orleans, says in his annual report for the year ending December 31st, 1869, "Considering the great volume of water discharged by the Mississippi, even were it not relieved of its surface drainage for so great a distance above us, the location of half the civilized population of the world on its banks would not contaminate its waters to the extent now produced in the Thames and Seine, whose waters are used in London and Paris."

The channel of the Mississippi is perhaps uniformly as deep as that of any river in the world, and yet, at the bar, where the current meets the tides from the Gulf, the water is seldom twenty feet deep; indeed vessels drawing seventeen feet of water have often to plow through this muddy deposit before making their exit into deep water. The commercial importance of the City of New Orleans has induced Congressional appropriations at various times for the purpose of removing this impediment to trade; but all attempts at dredging the bar, so as to secure a permanently deep outlet, have heretofore been ineffectual. It has been suggested, that straightening the channel, instead of deepening the bar, would scour out the deposit at the mouth, and give vent to this stream with such an impetus as to prevent bar-deposits. Practical science may approve of such an Herculean task; but common sense conceives the idea, that if the water at the mouth of such a stream find an exit more rapidly than its ordinary current, the flow of the entire stream will be quickened and much damage result therefrom to plantations along its banks.

Millions of money are annually expended to supply large cities with pure water, and to no city in the world, perhaps, is so large a quantity furnished with so small a cost. Nearly one hundred gallons daily are supplied for each inhabitant in the city, and "at about one half what it costs in other cities of this country." One cause of this enormous consumption is "the habit of running the water in the street gutters to do the work of scavengers." And fortunate it is for the city that this water can be had at such a price and in such abundance; for in all crowded emporiums the percolation of rain water, carrying with it in solution noxious matter of every description, so contaminates

well water, as to make it really poisonous. Much more would this be the case in New Orleans, where every house seems to have its foundation below the water level, and the natural drainage is insufficient to sweep off the accumulated filth. Still the ordinary wells are frequently used in New Orleans, and Prof. Jones, of the University of Louisiana, says, "their waters compare unfavorably with the drainings of a grave yard."

General Bragg in his interesting report alluded to above, says: "In London the terrible mortality from cholera has been readily traced to the use of such poisonous waters, and the wells have been filled under the authority of law. In New York the same thing has occurred within a few years, chemical analysis proving the water a clear, sparkling, liquid poison. The wells of Augusta and Savannah originally supplying most wholesome water, from beds of pure white sand, have become so contaminated as to poison the very animals forced to its use. The sad poisoning in the National Hotel of Washington City, a few years since, is traceable to the same cause.

"With all these examples before us it is yet difficult to prevent the use of such poisons. Within a short time many of these death-dealing wells have been sunk in this city, and the water, because it is clear and sparkling, is pronounced of superior quality. It is even said to have a decided mineral taste, due, doubtless, to the foul excrement it is proved to contain.

"When used for either drinking or cooling, or in the manufacture of anything as beer, whiskey, cider, syrup, bread or other articles to be taken internally, this water is a sure and certain poison, and its use ought to be prohibited here as in other cities."

The ordinary well was substituted by what is known as "*drove wells*," constructed of iron pipes driven in sections through the earth until a vein of running water is reached. Some of them are seventy feet deep, and yet from some cause their water upon analysis is proven to contain deleterious compounds, usually the "nitrate of urea." Prof. Jones further says, "not only would the mineral substances contained in these waters act medicinally and injuriously upon the stomach and kidneys, but the decomposing organic matters might give rise to severe and fatal diseases."

Strange infatuation, that property holders in New Orleans should allow these cesspools to be "driven" on their premises, endangering the lives of their tenants, and the health of the city, rather than submit to a general taxation that the inhabitants, both man and beast, might enjoy copiously nature's beverage in its purest form.

D. WYATT AIKEN.

Early Notice of the Charleston Phosphates.

In the proceedings of the South Carolina Agricultural Association, published in *The Southern Agriculturist*, Charleston, June, 1844, mention is made of the early efforts, looking to the improvement of native material for fertilizing purposes. Mr. F. S. Holmes, the veteran Professor of Geology in the College of Charleston, at that time a planter, residing at "Springfield," on the Ash-

ley, a few miles above Charleston, states that the circumstances which led to the discovery of his richest marl-pits, was simply finding two large shark's teeth upon an old causeway which passes through the plantation. Those teeth were quite abundant in the marl-beds of the Ashley River, and he concluded that marl could not be far from the surface. Accordingly, upon digging, he struck a bed of marl about four and one-half feet from the surface. "I began to remove the top soil," he says, "in the pit, and the labor was not greater than ditching in a fair soil; *but upon reaching the rocks, a layer of about one foot thick*, intermixed with stiff blue clay, the pick-axe had to be used." The strata were as follows:

	FT.	IN.
1. Strata of marsh mud	1	0
2. Strata of white sand	0	3
3. Strata of *marl rocks*, closely imbedded in stiff blue clay, of very irregular shape, filled with holes, and the prints of shell and small clams, in size seldom larger than a whole brick, but generally about the size of a man's fist	1	3
4. Dark sand, blue clay and pebbles	1	0
5. Blue and gray sand, with a large quantity of finely divided shelly matter, and numerous mussels, clams, and other shells; also shark's teeth of various sizes and shapes	1	0
Total	4	6
6. Marl of a brown or dark color, containing from 60 to 71 per cent. of carbonate of Lime.		

The American Journal of Science and Art (Silliman's) for May, 1849, contains an article by Prof. Holmes on the Geology of Charleston. Here he states that the geological formations upon which Charleston is built, are identical in age, and similar in other respects, to those upon which the great cities of London and Paris are located. This was ascertained some twenty years ago, but the phenomenon was then and since, till lately, of interest to the geologist only on account of the many and rare fossils which rewarded the search of the curious.

The Economy of Soiling.—Soiling cows, instead of pasturing them, both *makes and saves.* It saves inside fences; it saves land; it saves manure. It *increases* the production of milk and butter, taking a period of eight or nine months; although when grass is fresh in early spring there is a slight increase of milk, which cows give over that of being confined in the yard; yet when the weather gets warmer and flies abound, with pasture getting a little scarce, the amount given in the yard or stable, where there is shade, shelter and water, soon exceeds the other. The question, are cows as healthy in confined yards as on the pasturage system? can be fully answered in the affirmative. We think a small yard, supplied with shedding or trees for shade and protection, is preferable to being tied in a stable. In this yard they can walk a little about, or rub themselves against a post. It will be observed, cows in a field when eating are mostly standing still, and the exercise they do take of their own accord is to hunt food, or to protect themselves from the weather.—*Practical Farmer.*

THE RURAL CAROLINIAN.

VOL. I.] CHARLESTON, S. C., JULY, 1870. [No. X.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

CHINA AND THE SOUTH.

With regard to the introduction of Chinese labor upon our cotton fields and rice plantations, there may well be differences of opinion. The Coolie question involves social and political questions of moment, and should be considered in all its bearings. While others, better qualified than ourselves, are discussing it, we take advantage of the interest everybody feels in the Celestials and their country to suggest some unquestionable advantages which we may derive from them.

It is well known that our climate differs widely from that of most countries lying within the same parallels of latitude on the eastern continents. The great breadth of our territory toward the North, and the accumulated ice and snow with which it is covered during a large portion of the year, subject us to chilling winds, and a degree of cold unknown in similar parallels in Europe. The orange and the lemon flourish in the south of France, at Perpignan, Toulon and Nice, between the forty-third and forty-fourth parallels of north latitude, while we can barely grow the former in Charleston near the thirty-second parallel. China, however, and to some extent Japan, share the peculiarities of our climate, considerable cold and rapid transitions of temperature being common during the fall and winter, when the prevailing winds are from the north and north-east; while south winds prevail during the spring and summer, which are very warm.

The similar climate of the eastern shores of Asia should be a sufficient hint to us to look there for valuable plants suited to the eastern shores of North America. Central China and Southern Japan should have many vegetable and animal productions which may be profitably introduced here in the Carolinas, Georgia and Florida. We all know how well the China Tree or Pride of India and the Paper Mulberry flourishes in our cities and towns, and the Sorghum on our plantations. The Sweet-scented Olive, (*Olea fragrans*,) the Tea Plant, the Chinese Wistaria, the Japan Plum (*Mespilus Japonica*) and the Chinese Yam are among the somewhat less common examples. Now China and Japan abound in valuable fruits and vegetables, but few of which have ever been tested in this country. The currents of the former may suit our Southern States, where those of Europe fail, and the delicious Japan Persimmon, or date plum, (*Diospyrus kaki*,) would probably find a congenial home in South Carolina, Georgia and Florida.

The Camphor Tree of China and Japan should be experimented with in our more Southern States; and who knows but that the "silk plant," described in our May number, (p. 518,) may yet take the place of cotton as our great staple?

Whether we import Chinese labor or not, let us at least try Chinese tea and Chinese grains, fruits and vegetables. These, if they do not all succeed, will involve us in no political or social complications, and some of them will be almost certain to contribute largely to our prosperity by helping to diversify our agriculture and our horticulture.

DEATH OF WM. GILMORE SIMMS.

An extended notice of the late lamented Wm. Gilmore Simms, L.L. D., does not properly fall within our province as the editor of an agricultural journal; but, as in his death, our magazine has lost a valued contributor to its literary department, and we a very dear, personal friend, we should do injustice to our own feelings were we to

refrain from the expression of our profound sorrow and keen sense of bereavement.

It was given to many thousands, in all parts of our country, to feel the power as a writer, and to acknowledge and admire the genius of our great historian, novelist and poet; but it was reserved for comparatively a few to experience his never-failing loyalty, helpful interest, ready sympathy and unselfish kindness as a friend. To that favored few there has come, in addition to their share of the general grief, a sense of personal loss which no words can adequately express.

Mr. Simms loved his native South with a love which never faltered or grew cool, and devoted his best powers, during a long and busy life, to the promotion of her prosperity and progress, and the illustration of her history, customs and scenery; and she may well be proud of him as her noblest representative in the republic of letters, and mourn for him as one who, in departing, has left among us no one worthy to fill his place, or able to do his work.

A monumental column to Mr. Simms, in Magnolia Cemetery, is proposed. Let it be built, simple, massive and strong, like the man, and inscribed with his name alone. But a more enduring monument of his genius exists already in his books. These will keep him in remembrance when our marble and our granite shall have crumbled; and what more appropriate tribute could we pay his memory than in publishing, by subscription, a complete and uniform edition of his works, printed and illustrated in the highest style of art, and handsomely and substantially bound, so as to withstand the repeated readings of coming generations?

THE RURAL CAROLINIAN ABROAD.

It will be interesting to its legions of friends whose affairs keep them at home, to know that THE RURAL CAROLINIAN goes abroad and into every quarter of the globe. We have not only subscribers in almost every State in the Union, North as well as South, but our Magazine now goes to Mexico, Brazil and several of the South-American Republics, England, Germany, France, Spain, Algeria, Egypt, China, Japan, Australia and the Sandwich Islands; and arrangements are in progress, by means of which we hope to secure contributions to its columns, as well as seeds and plants for distribution, from most of these countries, and especially from those whose climate and productions are similar to our own. Persons residing in tropical and semi-tropical countries, who can read English, are not slow in appreciating the advantages which our publication possesses over those emanating from more northern regions, whether in Europe or America.

CHARLESTON PHOSPHATE ITEMS.

THE FERTILIZER TRADE.

During the first three and a half months of the present year, according to the Charleston *News*, there were shipped by railroad from Charleston over 30,000 tons of fertilizers, the price of which ranges from $55 to $100 a ton, but a fair average is about $70. At this rate the value of the fertilizers shipped over the different railroads this year is $2,107,280.

The whole quantity of fertilizers shipped would have freighted two hundred and eight trains of eighteen cars each. These trains, one before the other, with their engines and conductors' cars, would form a continuous line over twenty-seven miles long.

Besides the amounts shipped by the railroads, about 1,000 tons of fertilizers have been forwarded by the coasting steamers and schooners. There have also been shipped to foreign ports, 735 tons of crude phosphates, valued at $4,450. These figures will enable our readers to realize, perhaps, for the first time, the magnitude of the phosphate business, and the amount of capital invested in fertilizers by the farmers and planters of the State.

CHARLESTON PHOSPHATES IN SPAIN.

A Spanish paper states that it has advices "that there is about to be built in Valencia an establishment for the manufacture of miners' artificial guano. This new product, which is composed of South Carolina phosphatic deposits, subjected to a treatment of sulphuric acid and sal ammoniac, is destined to become a formidable rival of the Peruvian guano, large quantities of which are consumed in that province."

SULPHURIC ACID WORKS.

Extensive works are being erected in the highlands of the Hudson, New York, designed to produce sulphuric acid in sufficient quantity to meet the demand for superphosphate of lime. In the manufacture it is used to render the phosphoric acid of crude phosphate soluble and fit for use as a fertilizer.

NEW PHOSPHATE COMPANIES.

In our October number we gave a list of six companies engaged in mining and manufacturing the Charleston phosphates, and representing an aggregate capital of nearly $2,000,000. The success of these companies and the rapidly increasing demand for commercial manures have led to the organization of a number of new companies.

We give the following list, which, however, may not be complete:

1. THE MARINE COMPANY.

The Marine and River Phosphate Mining and Manufacturing Company of South Carolina includes in the field of its operations all the navigable waters of this State where phosphates can be found. At present it has a steam dredge and one hundred flats at work. It is intended to erect extensive works for the manufacture of fertilizers. Capital, $500,000. Officers, Geo. W. Williams, President; Jas. H. Taylor, Treasurer; C. C. Coe, Superintendent; B. C. Hard, Secretary.

Directors: Geo. W. Williams, D. T. Corbin, E. Platt, W. L. Bradley, E. Willis. Office, No. 5 Hayne street.

2. THE CHICORA COMPANY.

The Chicora Mining and Manufacturing Company of South Carolina is located at Filbean Creek, in the County of Charleston, and will have its principal business office at that place. It is organized as both a mining and a manufacturing company. Capital, $70,000. Officers, A. D. Estill, President; Thos. L. Witsell, Treasurer. Directors, John H. Holmes, Jas. S. Murdock, T. A. Jeffords, Rudolph Siegling.

3. THE ATLANTIC COMPANY.

The Atlantic Phosphate Company of Charleston, South Carolina, is located at Livingston Farm, on the Ashley River. A track will be laid connecting its works with the South Carolina Railway. The mines are on a fine bluff. This company is now mining, and expects to begin to supply the manufactured fertilizer next fall. Capital, $200,000. Officers, F. J. Porcher, President; F. J. Pelzer, Treasurer. Directors, W. P. Hall, B. G. Pinckney, Louis D. DeSaussure, Wm. Lebby.

4. THE STONO COMPANY.

The Stono Phosphate Company of Charleston is finely located at Happold's Farm, on the Ashley River.

The stock of this company is largely subscribed to by merchants and planters in the interior. They expect to have fertilizers for sale for the next crop. Capital, $350.000. Officers, Jas. S. Gibbes, President. Directors, Henry Gourdin, Geo. S. Cameron, Robert Mure, J. D. Aiken, Chas. Simonton, B. F. Huger, Alonzo J. White, and one vacancy.

5. THE FARMERS' COMPANY.

The Farmers' Fertilizing Company of South Carolina includes among its stockholders some of the leading men in Charleston, Winnsboro', Greenville, and Charlotte, N. C., and they have under their control lands at Phosphateville; also lands on Shipyard Creek, contiguous to the Etiwan works. The company contemplates digging for phosphates and manufacturing sulphuric acid. Capital, $200,000. The officers have not yet been elected.

6. THE PALMETTO COMPANY.

The Palmetto Mining and Manufacturing Company is located at Spring Farm, on the east side of the Ashley River, sixteen miles from Charleston, and opposite Middleton Barony. The company has bought there 1,000 acres of land, containing a very rich deposit. Mining operations have been commenced, and an extensive wharf and the necessary buildings are being erected. Machinery specially adapted to the purpose of washing and grinding the rock is now being made by Messrs. Eason, of the Eason Iron Works, and a mill will soon be erected. It is the purpose of the company to sell the ground phosphates to manufacturers and to farmers who may desire to manipulate their own fertilizers. Officers, T. D. Eason, President. C. H. West, C. R. Holmes, R. Q.

Pinckney, W. G. Whilden, Directors. C. H. Holmes, Treasurer. Thurston & Holmes, Agents.

THE STATE FAIR FOR 1870.

We hope the interest awakened by the great Fair of the State Agricultural and Mechanical Society, held last fall in Columbia, has been kept alive throughout the country, and that we have all made up our minds to make the coming one a still more decided and triumphant success. An indication that such will be the case may be found in the character of the various committees which have been selected with care from the most practical men from all parts of the State, who are on the lists as life members of the Society. We would earnestly urge these gentlemen to report, as did the committees last winter, and thus make again next fall another interesting pamphlet. The last we consider one of the best text-books for a young farmer we ever saw. We can diversify his reading a little, next fall, as the subjects are different.

Planters, farmers, manufacturers, mechanics, housekeepers, all are interested in the Fair, and it is not too soon for us to think about it and consider what we can do toward promoting its success.

IMMIGRATION AND DIRECT TRADE.

A LETTER FROM MR. LAWTON.

Friend Jacques:

I promised to correct an error in your editorial allusion to the late Agricultural and Immigrant Convention. In the June number of THE RURAL CAROLINIAN you say, in the fourth paragraph, "we have at least one practical proposition, and it comes from a source that will give it weight. During the session of the Convention, the Hon. George A. Trenholm stated that the South Carolina Railroad Company was willing to bestow upon immigrants alternate sections of lands belonging to the company; that the company would subscribe not exceeding *$25,000 for establishing a reliable line of steamships between Charleston and a first-class European port.*" The mistake is equal to $75,000. The proposal from the committee of delegates representing the South Carolina Railroad Company *was to put on four steamers on the line,* and Mr. Trenholm said they would subscribe $25,000 to each steamer, equal to $100,000. In my opening remarks before the Convention, I had suggested to commence the good work by putting on two steamers.

It affords me gratification to say that the Committee on Immigration, composed of energetic merchants, with Colonel W. L. Trenholm as their chairman, are earnestly at work in perfecting their organization on a business basis, which promises success. They will very shortly name the county committees to obtain subscriptions throughout the State, in shares of $25 each.

The Committee on Direct Trade, consisting of gentlemen of the highest integrity and long experience in commercial affairs and Southern trade, are engaged in their department.

The financial resources of Charleston are greatly cramped, owing to various causes, but my impression is that we can calculate on a subscription of $150,000 from our business men; and I take leave to append an estimate of the sources from whence the necessary sum can be calculated on to establish a company on a firm and solid basis:

South Carolina Railroad Company...	$100,000
Charleston subscription.....	150,000
Other railroad companies.....	100,000
Subscription of farmers, at $25 per share	250 000
From subscriptions abroad	200,000
	$800,000

The steamers will cost $150,000 to $175,000 each.

It can be demonstrated, it appears to me, that the landowners and farmers in the State may reasonably receive three dividends on investments in this company. The owners of the steamship line that has been plying to this port from Liverpool for the past two seasons have made money, or so I have been informed from reliable authority. An increase of immigrants of such a character as our own steamer's agent, on the other side of the water, can choose and send here, will add greatly to the production of our soil, and this will surely increase the value of lands in all the up-country counties in a greater ratio certainly than the low-country, for there the settler will locate in greater numbers.

Yours, WM. M. LAWTON.

KEEPING ACCOUNTS.

The questions does farming pay? and what crops pay best? can never be satisfactorily answered till farmers generally devote more attention to their book-keeping. The merchant does not ask such questions. His books tell the story in a way that cannot be misunderstood. He knows what he has gained or lost, and just where and how he has gained or lost. The farmer should be equally well informed in regard to his own business. Not only the farm, as a whole, should have its debits and credits, all carefully set down and balanced, but each separate field and crop should be made the subject of a separate account, being charged with interest, manure and labor, and credited with the value of the produce. When farmers shall learn to keep full and accurate accounts, they will know whether farming pays or not, and *how* it pays; and the very fact of keeping accounts will help to *make* it pay.

——We have received a copy of the Newspaper Directory published by Geo. P. Rowell & Co., of New York, containing a complete and accurate list of all the dailies and weeklies published in the United States and British Provinces. Bound up with this volume is a Rate-Book, giving the cost of advertising in most of the principal newspapers of the United States. There is also some agreeable reading in the shape of biographies of well-known advertisers. The whole forms a large octavo volume of nearly nine hundred pages, and is sold for five dollars.

——J. W. Burke & Co., Macon, Ga., have issued in handsome style the letters and other agricultural and miscellaneous articles of Mr. David Dickson, of Sparta, Georgia, making a volume of about three hundred pages, illustrated with a portrait, and substantially bound. Mr. Dickson's name is a sufficient guarantee of the value of the work.

——Persons having a pure and *superior* article of Scuppernong wine for sale will find it for their interest to advertise in The Rural Carolinian and remember the editor, as we have frequent inquiries in regard to it.

——A large number of "Notes and Queries," and articles intended for the department of "Correspondence," are necessarily deferred for lack of room. We will try to get them into our next number.

——We want for our cabinet specimens of the Tall Oat Grass, (*Arrhenatherum avenaceum*,) and of Rye Grass, (*Lolium perenne.*)

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Cotton must now be encouraged by constant and careful, but shallow culture, to promote the production of forms and bolls. Use light sweeps and follow by the hoe.

Corn, if not already laid by, must be kept clean till the blades meet across the rows. Cow peas may be sown broadcast at the last working, where not already planted, covering with a cultivator or harrow.

Cow Peas may be sown broadcast, as a separate crop, for hay. From a bushel to a bushel and a half per acre will be a sufficient seeding.

Corn Fodder may be pulled, but we doubt the propriety of the process and do not believe it pays. Sowing corn in drills for fodder, making hay and cutting up your corn, instead of pulling the ears, and using the stalk and leaf for feed, are better plans.

Sweet Potato draws and cuttings of vines may still be put out, but do not delay this work, as it will soon be too late for a crop.

Hay is a most important and too much neglected crop. Make all you can, and prepare to make more next year, by getting some suitable land into grass.

Draining and Ditching may be done to advantage now if you have any time and hands that can be devoted to it, without neglecting the crops.

Turnips should be largely planted. Prepare the land thoroughly and manure heavily, and you may make your first sowing about the last of this month; and, if it fail, you can try again in ten days, and so on, till a stand is obtained; but August and September are generally better months for sowing the main crop.

GARDEN WORK.

Clear off and turn under weeds, dig up deeply, manure as required and prepare for fall crops.

Cabbage, Cauliflower and Broccoli may be transplanted, if you have plants in your seed-bed, choosing the evening or a rainy day for the operation, and shading the plants for a few days; but next month's plantings will be likely to do better.

Of Beets, Carrots, Parsnips, etc., it is now very difficult to get a stand, but if you can protect the young plants against the hot sun and beating rains you may yet get a fine crop early in the fall.

Snap Beans may still be planted for a succession.

English Peas may be tried, mulching heavily between the rows.

Water Melons, Squashes and Cucumbers for a late crop may be planted, and if they survive they will give you a good late crop.

Tomatoes may still be planted, using cuttings if you have no young plants.

THE FLOWER GARDEN.

Roses may now be budded and layered.

Chrysanthemums, and many other plants, may also now be propagated by layers.

Evergreen Hedges should be trimmed, and box edgings clipped.

Save seeds, and put away in paper bags, carefully labelled with name and *date*.

RURAL NOTES AND QUERIES.

THE GRASSES.—Will you please give me the information as to the grass best adapted for hay in this climate? Timothy, Orchard or Herds? or what other? Which best adapted to low, rich bottom land, and the most favorable time for seeding, fall or spring? I wish to seed several acres this fall if it is the proper time. Also, how can you exterminate the wild onion? Cultivation does not seem to effect it.

ABBEVILLE SUBSCRIBER.

Herds Grass has been experimented with by very few planters in middle South Carolina, and we learn it has done well, but creates no enthusiasm. Orchard Grass is annually becoming more popular, and will grow well on any soil. Timothy does best when sown with Clover; have never seen it tried alone. Of all the grasses Clover is the most valuable. A "rich" bottom in Abbeville, if *properly underdrained, subsoiled, harrowed and rolled*, will produce two tons of delicious hay by the 1st June to every acre, and this hay will keep idle mules or horses fat without other feed. Two tons are worth seventy-five dollars at any depot in the State.

As the time for sowing is a debatable question, sow one half of the bottom in Red Oats and Clover in September, or early in October, sow the other half in Oats alone in the fall, and sow the Clover in February following, on the oats. If you expect to reap an abundant and remunerative harvest of hay, have your land as smooth as a well swept floor. One hand will not cut an acre of good Clover hay with a grass blade in two days. A two-horse mower, on a *smooth*, firm surface will cut an acre in two hours. Machinery will not repay the investment on badly prepared land. Of this we will speak more particularly in our next.

If you sow Clover, take off the Oat crop, but don't let a hoof on the Clover that year. Just let the land lie idle, and you will never regret it.

Of the extermination of the wild onion we cannot speak, never having had to encounter it. Will not some of our readers answer the above inquiry about this pest?

THE JAPAN PLUM.—The so-called Japan Plum is not properly a plum, (*Prunus*,) nor is it as our friend Fuller of *Hearth and Home* conjectures, the Japanese Persimmon, (*Diospyrus kaki*,) but a mespilus (*M. Japonica*) which belongs to the natural order *Rosaceæ*, sub order *Pomaceæ*, in which are included the apple, the pear and the quince. There are several trees of this species in Charleston, which have borne fruit, but the crop is sometimes cut off by spring frosts.

THE SCUPPERNONG.—A correspondent, writing from Valdosta, Ga., says: This is a great country for the Scuppernong Grape. I have about 450 vines from one to three years old, and I am of the opinion that this is the best country in the world for them; they bear the third year, and some few the second. We have the best kind of material for arboring (lightwood) on the premises, and a boundless supply at that. Although they do so well here, there are but few that have any vines. H. B. H.

Onions in the South.—N. R S. wishes complete instructions for growing onions on a large scale, in South Carolina. We will endeavor to give an article on this subject in our next. The onion is necessarily a winter crop with us, to be sown in August or September, and transplanted (the thinnings of the rows) in November. Will not our excellent contributor, Dr. Rose, who knows all about onion culture, as here conducted, let us hear from him on the subject?

The "Rice Bird" Reaper.—I have just heard that the "Rice Bird Reaper" has had a thorough trial recently in or near the City of Savannah, before a number of rice planters. There are a number of us deeply interested in the particular branch of labor assigned to this machine, and you will greatly oblige many rice planters of this State by procuring a report from some planter present, and publishing the same in your valuable magazine. If the report is very favorable, I would be glad to learn if any of them present at the trial have thought it worth their while to order any for their own use.

Beaufort District.

Big Leg.—A subscriber wishes to know what will cure the "big leg" in the horse. Who can give him the benefit of experience in the treatment of the disease?

Clover.—Several queries in regard to Clover will be answered in our next more fully than our present space would permit.

Bee Culture.—To an inquiry in the April number of The Rural Carolinian from a subscriber relative to bees being profitably raised, I say yes, for domestic purposes, and I believe even selling honey can be profitably done, especially in the vicinity of large swamps. The arrangements are simple enough for raising bees. Make a bench or benches twenty feet long, and make your hives twenty inches long and twelve inches square, all the joints tight, place two small sticks in your hive. Then make you a shed to turn rain effectually, close up the north and northwest side, leaving the south and east side open. The shed should only be wide enough to exclude the sun a part of the day, and place your hives a foot apart on your bench, and you have the whole complete.

Mr. Editor, I have a "rasping" for you and Col. Aiken one of these days, when time will admit. In the meantime, I send the above for the purpose of benefiting a subscriber, if you think it will do so. C.

Cooper River, S. C.

A New Fig—Query.—There is, in this locality, a fig raised from seed supposed to be foreign, as the young tree was dug up in front of a store where some refuse figs had been thrown. This tree fruits almost every year, but sheds its fruit before ripening. Can you or any of your readers tell the reason why, and the remedy? By so doing you will much oblige Morys Haggar.

Edgewood, S. C.

Cure for Lice on Cattle.—Take a shovelful or two of dry ashes, pour it along the neck, back, etc., in dry weather. Repeat it for a few mornings. I have not known it fail in *forty years.*

Alabama Subscriber.

Domestication of the Ostrich.—In your June number I find an article on the "Domestication of the Ostrich." I am very fond of fowls, and am trying to gather a great many varieties around me. I think that the rearing of the ostrich might be made profitable. At least, I am anxious to try it, and they will not only be profitable, but will be a benefit to the country. As I said, I am anxious to get a pair. I shall be indebted to you if you can give me any information as to where they can be procured, the probable cost, and cost of transportation, etc. W.

Mayesville, S. C.

Will our valued contributor, the author of the article referred to, please give our correspondent the information desired?

Rye Grass.—Will you, or some of your correspondents, inform us if Rye Grass, Evergreen Grass and Perpetual Pasture Grass are all the same, and if so, where can the seed be obtained?

Alabama Subscriber.

Evergreen Grass is otherwise known as Tall Oat Grass. Whether "Perpetual Pasture Grass" is the same or not, we do not know. Rye Grass or Ray Grass is a different species, (*Lolium perenne.*) Persons who have grass seeds for sale should advertise in The Rural Carolinian.

MERE MENTION.

——The orange crop of Florida does not promise to be as good as last year, but as there are many young groves coming into bearing, the supply, it is believed, will not be materially less.

——The *Poultry Bulletin* says: A movement has been set on foot to organize a Poul-

try Society in Charleston, S. C. No part of our country is so well adapted to the raising of choice poultry as the Southern States. Their warm, dry climate, mild winters, and numerous insects are peculiarly favorable to fowls. Our Northern markets will offer an insatiable demand for broilers from February to July.

——A convention was lately held in Louisville composed of delegates from Buffalo, Erie, Milwaukie, Toledo, Chicago and other points near the lakes, representing an association of nearly one thousand families, who desire to find homes in the South.

——Statistics show that Alabama is the fifth State in the Union in the production of wheat. A few years ago she was not even mentioned in this connection.

——Seven pairs of English sparrows set free in Central Park eleven years ago, have multiplied into a million within a radius of thirty miles, exterminating nearly all the insects.

——A Philadelphia doctor says that washing horses in the morning with water in which one or two peeled onions are sliced, will keep all the flies at a distance. The experiment is worth trying.

——Two gallons of fine charcoal will purify a dozen hogsheads of water, when the smell is so unpleasant it cannot be used.

——N. G. Sherman, Norwalk, Ohio, says liquid sheep manure poured around vines will protect them from the ravages of the striped bug.

——The Pensacola *Commercial* makes note of a ripe fig eight inches round and weighing six ounces.

——Mrs. Harriet Beecher Stowe is cultivating the India-rubber tree and sugar-cane on some low lands at her place (Mandarin) on the St. John's River, Florida.

——The cultivation of the sugar-cane is largely increasing in Florida, and the crop is proving far more trustworthy and profitable than cotton.

——A box of lemons will average about 320 in number; a box of oranges from 200 to 250.

——Virginia peanuts weigh 22 pounds to the bushel. Wilmington do. 26 to 28 pounds. African do. 32 pounds.

Correspondence.

CALIFORNIA CLOVER.

Editor of The Rural Carolinian:

Seeing in the June number of The Rural Carolinian a notice of the Spotted Medick or California Clover, and having had some little experience with it, I have concluded to give you what information I have of its growth, etc.

It was first noticed in my back-yard about three years since. It attracted attention by its luxuriant growth. I carried the seeds and some of the stems to Montgomery, but failed to gain any information concerning it, until a relative, returning from Texas, recognized it, having seen it growing spontaneously on the cotton lands in Louisiana.

During the second year of its growth, I grazed my milch cows on it, causing an increase both in quality and quantity of milk. Previously they had given but two gallons, but they soon increased to four. I allowed them to graze about one hour in the morning, and the next could scarcely discover where it had been eaten. Three years ago, it covered ten yards square, now about one acre.

It did not do well this year, as stock overran it all winter, and were shut off too late in spring; and the drouth of last month affected it somewhat. The ground on which it grows has been used as a back-yard for forty years, and has never been broken by the plow. The soil is prairie.

The clover is just the thing for pasturage, during the months of February and March, in this country, where the land is set in Bermuda Grass, as it grows luxuriantly in the thickest bed of it. After it dies out, which it does about the last of May, the Bermuda soon springs up and gives a good pasture again. I have sown very little of it. I think the proper time to be about the last of August, as that is the time the seed naturally starts. I would sow the first rain in the fall, let it come early or late, as we usually sow turnips. I would also say, that while in season, it furnishes an immense quantity of feed to the acre, and matures a very large amount of seed. I send a small package of seed.

W. T. Taylor.

Snowdon, Montgomery Co., Ala.

SO-CALLED PROLIFIC CORN.

Editor of The Rural Carolinian:

In March, 1869, I bought in Rome, Ga., one peck of corn, from a Mr. Ellison, said to be *prolific corn.* I paid, I think, one dollar and seventy-five cents for the peck. The grains were very white and small, and the peck planted three acres.

The land was laid off in five feet rows, the plow running three times in the same furrow; one hundred bushels of cotton seed were strewed in this furrow, and the bed completed with an ordinary shovel, followed in each furrow by a twelve-inch subsoil two inches wide, flattened at the point, on an ordinary wooden plow stock. On this flat bed holes were dug with a hoe every three feet, and two grains of corn dropped by myself, and covered by a third person with the hoe. Every grain seemed to germinate, and a perfect stand was the consequence.

Until the 1st of July, my patch was most promising; stalks as large as a man's wrist and tall as a May-pole, fodder prodigious, and two shuck-shoots on every stalk as long as your arm. For the corn I can't say so much. The cobs were very large and long, but none of them well covered with grain. Had they been all full of grains I would not have considered it a *prolific corn*, as it purported to be when sold.

Is not this the same corn as that of "T. S. F., near Rome, Ga.," on page 585 of your June number? PLANTER.

SPAYING ANIMALS.

Editor of The Rural Carolinian:

I find in your June number a few questions propounded by "M. M. L.," of Columbia, S. C., relative to the castration of female animals, particularly sows.

For twenty years I have done all my spaying, have given the business close attention, and have ascertained the following facts, which I think will cover all of "M. M. L.'s" questions:

A sow can be spayed successfully after impregnation, but will invariably lose the contents of the womb. The handling of the womb to find the ovaries, as is frequently done, and the severing of the ovaries, produces more or less inflammation of the womb, hence a discharge of its contents follows. When the ovaries are abstracted she can never breed afterwards.

I always spay in the side. There are serious objections to spaying in the abdomen, the pressure of the bowels keeps the incision strained, the severed parts cannot unite firmly, stitches may give way, the intestines come out, and your hog will die. A decided improvement in the flesh, both in quantity and quality follows spaying.

The influence of the moon, and the signs of the zodiac are all *bosh*. I make it a point to spay when the animals are old enough, whether that time be July, August, or October.

There are several essentials to successful spaying, which must be observed if you want your sows to thrive. All animals should be operated on when young. The best time is just before their *first heat*. They should be lean; the thinner in condition the better. The bowels should be freed of their contents by keeping them up in a close pen for two days and nights previous to operating, not permitting them to eat or drink anything except water.

Use a sharp knife, and when you cut cut clean; do not gash or lacerate the skin or flesh. For stitching up the incision, I use No. 8 knitting cotton. Have plenty of water for your animals to wallow in. A little tar rubbed on the cut will prevent flies from depositing their eggs thereon. J. T. G.

Muscogee County, Ga., June, 1870.

PREPARING RED PEPPER.

Editor of The Rural Carolinian:

In a recent number is a request on this subject: Gather as soon as ripe, open the pods to remove and reject the seed, then pound to a pulp in a mortar, or on a marble slab, which is easily and quickly done. Dry the pulp carefully and very completely in the sun, oven or stove, avoiding too high a temperature. It may now be very easily pounded or ground as fine as you wish; and whether ground immediately or not must be kept in good, strong, sound paper, well wrapped and secured, or better in suitable bottles, which, after filling, should be heated to about 200° F., closed with fine velvet corks and sealed. Thus it may be preserved in perfection for years, being inaccessible to air and insects. If the pods should be already dry, it is very difficult to powder well. In that case, heat them in an oven or stove, being careful not to burn or char; and before cooling they may be coarsely powdered in the mortar or mill with facility. But the result is not so satisfactory as by the former method.

D. L. PHARKS, M. D.

Newtonia, Miss.

THE STEAM PLOW IN LOUISIANA.

Editor of The Rural Carolinian:

I have just come from a visit to the Magnolia Sugar Plantation, forty-five miles below New Orleans, which you visited while here, and belonging to E. Lawrence, the pioneer of steam plowing in the United States.

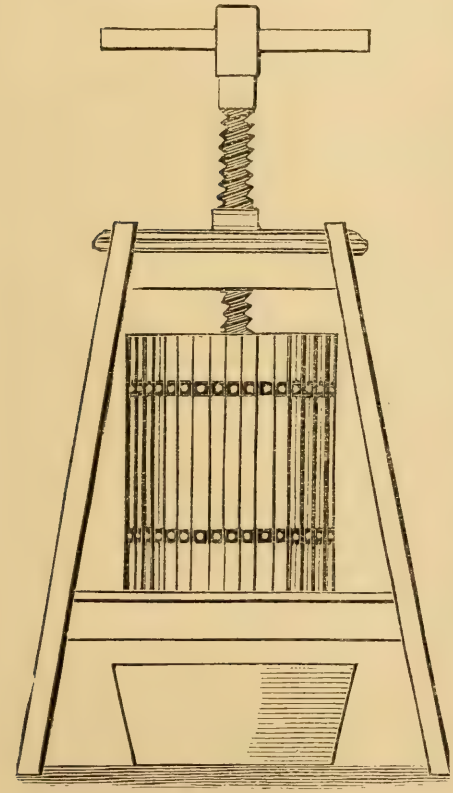
The crop on his plantation of *corn* and *cane* is about one thousand acres, which has been broken up and subsoiled by the steam plows. The entire crop looks finer and more promising than any crop of *cane* or *corn* I have ever seen on the first day of June. There has not been one drop of rain on the crop for over six weeks. The crop is nearly all laid by, the middles plowed out, and fully one month in advance of usual year's work.

The number of *hands* that have been employed to make and cultivate this crop is

more than thirty-three and one-third per cent. less than any previous year. The very severe drouth we have had has not checked the growth of the *cane* or *corn* one particle. I am more than convinced the crops of the South can be increased fully thirty-three and one-third per cent., average yield per acre, and the number of *hands* and *mules* decreased fully to same percentage by use of steam plows. I speak from personal observation. I have been a planter for twenty-five years.

OBSERVER.

A DOMESTIC WINE-PRESS.



Editor of The Rural Carolinian:

The increasing manufacture and consumption of Scuppernong Wine, and the primitive manner in which the juice is expressed, where it is done in small quantities and for domestic purposes, have induced me to make a press of which the above is a sketch, that I think will readily serve as a model to any one who is moderately accustomed to the use of carpenter's tools.

The only portion that is at all difficult is the tub. The staves of this are each an inch in width and a half-inch in thickness. The diameter of the two iron hoops is the same, and as, in consequence of this, the hoops cannot be tightened in the usual way, each stave is secured in its place by a small screw passing through the hoop, as indicated in the drawing. There is a slit between each stave below the bottom hoop and in the middle of the tub, through which the juice passes when the pressure is applied by the screw above. It is then received in a groove that exists in the platform immediately around the base of the tub, and then flows through an opening in said groove into the earthen vessel that is under the platform. The lid that the point of the screw works upon is made to move without any friction against the inner sides of the tub, and, in the drawing, is not represented, as it is supposed to be in its proper place.

The screw is simply a carpenter's bench screw, which may be procured of almost any hardware dealer, and the cross-piece through which it passes is only four and three-quarter inches wide, leaving ample space between it and the frame to admit of the grapes being thrown into the tub.

A more simple way of making the tub would be to have a square box, with slits in the sides, and further strengthened by two wooden slats screwed to each side, answering the same purpose as the hoops. And instead of the groove cut into the platform, four slats might be nailed around, with an intervening space of one and a half inch, into which the juice would flow.

The tub is capable of holding a half-bushel of grapes, and the press would be serviceable to any one making wine on a larger scale than for family use.

G. E. M.

COVERING SWEET POTATO VINES.

Editor of The Rural Carolinian:

You advise "R. A. C." not to cover his potato vines at all. I do not agree with you; and will give my plan of working the crop:

As soon as the potatoes begin to come up "skelp" the top of the bed with the hoe. When they are all well up take advantage of the dryest days to run a plow up and down each bed, throwing the dirt from it, leaving a ridge with the potatoes about a foot wide. Let two hands with hoes follow, one on each side, to clear this ridge from grass. When the vines have run from a foot to a foot and a half, and are lying in the furrows, take a good turning plow and throw the earth back upon them, covering everything but the place where the vines come out of the ground. Run four furrows between each two rows. Hoes may follow, but there will be little for them to do.

In two or three weeks, the ground will be better covered than if you had not covered

the vines. The potatoes will grow bigger this way, if not more of them. Let your correspondent try this plan, and he will practice no other afterward, and thank—

J. W. P. L.

Nichols, S. C., June, 1870.

[This plan may be a good one when the *potatoes* are planted where they are to grow, but we deem this an error, in the outset, having always got much heavier crops from slips or "draws," and from cuttings of vines.—Ed.]

AGRICULTURAL IMPROVEMENT.

"Progress with Prudence, Practice with Science."

Editor of The Rural Carolinian:

Having recently passed on the South Carolina Railroad and spent a week at Aiken, I was impressed with the great improvement that had taken place in the last few years, attributable to new settlers and improved cultivation, more particularly round and about Aiken. The crops of wheat that I had an opportunity of seeing were good, and to my mind encouraging features. One of my friends had a crop of corn which he estimated would yield twenty bushels per acre; his cotton and other crops most promising, except the peach, which will be almost an entire failure this season in that vicinity.

With the exception of a few thoughtful and wise planters here and there, I could not but feel anxiety for the general well being of the farming interest, when I noticed that the gardens and orchards, and almost every available spot, was cultivated in cotton, to the neglect of cereals and other provisions.

I earn my bread and support my family by cotton; but do planters not know that commercial revulsions, wars, and rumors of wars, depression of trade from one cause or another, may depress the price of cotton below a price at which it can be grown. In a mistaken spirit to grow cotton in these Southern States, and depending on the Northwestern States for corn, flour, bacon, what would our fate be with blight and failure of the Western crop of provisions?

I have transacted business for cotton planters for over forty years, and those for whom I purchased least corn and bacon, and, as a matter of course, made their supplies, usually sent me the largest crops of cotton, owed fewer debts, and were more independent, and were always enabled to keep their cotton in times of a depressed market.

The following beautiful lines I found in Skinner's Baltimore *American Farmer*. They will bear reading and republishing over and over. The writer who contributed them says: "They are from the pen of the poet Aratus, who was born near Tarsus, and lived about the time of the first Punic war, B. C. 250 years." He was quoted by St. Paul, as the contributor adds, "He undoubtedly had reference to Aratus when he made this observation, 'In him we live, and move, and have our being:'"

"Jove fills the heavens, the earth, the sea, the air,
We feel his spirit moving here and everywhere,
And we his offspring are. He ever good,
Daily provides for man his daily food:
Ordains the seasons by his signs on high,
Studding with gems of light the azure canopy.
What time with plow and spade to break the soil,
That plenteous stores may bless the reaper's toil,
What time to plant and prune the vine he shows,
And hangs the purple clusters on the boughs.
To him the first, the last, all homage yield,
Our Father wonderful, our help, our shield."

These lines convey to one's mind so much food for encouragement, thought and hope, I believed they would not be misplaced here.

Yours, Wm. M. Lawton.

CORRECTION.

Editor of The Rural Carolinian:

On the 10th May last, I sent you an infallible remedy for colic of horses, caused by feeding and drinking whilst heated by travel, and inadvertently wrote "Two or three tablespoonsful *sulphate* of lime," etc., instead of "*chloride* of lime."

I *know* it to be a very valuable remedy for the above disease in horses, having used it frequently myself, and known it to be used by others, to whom I had communicated it. I never knew or heard of its failure, hence I have denominated it an *infallible* remedy.

For the benefit of that noble animal, the horse, I therefore request you to correct my mistake. Subscriber.

New Orleans, La.

Tomato Pie.—Scald and pare partially ripe or green tomatoes; slice thin, and place in your pie a layer of sliced tomato; sprinkle over them salt, pepper, a little sugar, and a few cracker or stale bread crumbs; then another layer of tomato, salt, pepper, etc., and so on until your plate is full; cover with an upper crust and bake quick.

Tomato Omelets.—Beat six eggs, mix two tablespoonfuls of flour in a little water, and add some salt and pepper; peel and chop very fine four tomatoes, stir this all together. Put a bit of butter half the size of an egg into a frying pan, heat it hot, turn on the mixture, stirring it all the time until it begins to thicken, then let it stand to brown three minutes; lap it half over, slip it on a dish and send it to the table very hot.

Department of Literary Miscellany.

THE SUMMER CHILD.

"Next Summer—?"

"Next Summer—?" April's Iris wreath,
With all its balm and glow,
Not lovelier than the hope beneath
That sang of Summer, so!

"Next Summer—?" those are pleasant words
From lips like April's own!
A carol, as of all the birds
Of all the Summers flown!

"Next Summer!"—and the tender gloom
Of violets is here—
And hope is garlanded with bloom
That dies not with the year!

The Summer of the singer's theme—
And of the seer's eyes—
These claimed the rapture of the dream
That wake in Paradise.

TORCH HILL.

OUR LOW COUNTRY SCENERY.

Vast rocky or mountain pictures are very cold and cheerless. They strike you with awe, but they invite no sympathies. They demand your wonder, but they yield and expect no love. You see all their possessions at a glance—you feel that there is nothing in reserve. Beyond the grand, bald outline, they have no treasures. They move you at the first sight, but seldom reward a second, and the mind at length becomes discouraged and sad in their contemplation, and turns from them to the crowded city, as if seeking human association and relief.

But the effect is far otherwise of our Southern slopes, our woods and waters. They do not strike you at first, and seldom startle, but, at the same time, they never offend. They rather woo and invite you by their soft attractions. You wander among their groves as you would among the enchanted bowers of an Armida. They tempt you to look out for enchantments. The brightness of their green, the wondrous luxuriance of their growth, the rich glow and glory of their flowers, the songs in profusion and of every note, of their profligate birds—arouse the fancy, until the spiritual nature feels a flush of expectation, which gradually peoples the scene with fairy and imaginative creations. You are won away, unconsciously into thoughts and musings which give a strange and sweet vitality to all that you behold. A thousand delightful meditations inform the mind, and you wander onward, soothed and satisfied with attractive fancies that give you the most appropriate companionship. Nor is it the soft and gentle alone that is awakened in your nature by these scenes. They can impress with equal awe and solemnity. What more imposing spectacle than the dense pine forest, stretching away for leagues, a monotonous waste, like that of sea or desert of unvarying forms—a realm of equal shadow and silence, gloom and depth, in which all the dwellers are crowned sovereigns—sovereigns without subjects—voiceless, hopeless, heirless—without speech, without communion—waving to and fro their inexpressive heads, with one unbroken swing of solemn idiocy!

What more wondrous and awful than the very waste fertility of our mighty swamps—shrined in flowers, wrapped in beauty, gorgeous in natural wealth, rich in all shapes and colors, wondrous in vine, and wreath, and jewel—terrible in the startling beauty of their reptiles, in the scream of their mighty birds, in the awful majesty of their deep recesses? Their buds press your cheek as you go forward—their vines stretch forward with a thousand fingers to wind you in their grasp—your footsteps crush perfume from their leaves—your fingers are crimsoned with the delicious juices of the wild grape—and life in forms the most magical—and loveliness, in gleams the most musical—are ever rising to the senses, as if to persuade the faith into those ancient fancies, which never left such regions without their elves and fairies.

The deep impenetrable thickets skirting the narrow river or oozy lake, seem the very regions of ambush and surprise; and you look momently to see the feather-cinctured warrior darting out from the shade, in all the panoply of forest warfare. A gloom, which is not painful, gives a mysterious tone and character to this peculiar realm of loveliness and life, and the very droplets of sunlight that fall and trickle through the tree-tops and shrubbery upon the earth below, seem so many wandering shadows—shapes of spiritual life—that come only to declare that, however little sought or beloved by man, the region is not yet abandoned of Heaven.

WM. GILMORE SIMMS.

MY WINDOW.

Non ebur neque aureum.

Thro' many a grand cathedral window streams
By stained panes the softened day,
And varied glory gleams
On those who pray.

In many a lady-bower the breezes blow
Thro' fretted work of lute design,
While sweet and red below
The roses shine.

My window frames a narrow bit of sky
Alone; nor painted pane to glow,
Nor cavern work have I
To tune the zephyr's flow.

But redly beam the mornings when they rise!
And one white cloud, with gilt outlines,
Just past my lattice lies
Each morn that shines!

And bluely sleeps the moon within the frame;
And one slow bird goes floating by
Each noon-tide, like a dream!
And Heaven seems nigh.

And one sweet star at evening standeth still
Between the narrow strips of wood,
Alway—and shines its fill!
And God seems good.

I would not change my window with a Queen,
Nor barter pictures with a King;
Such restful thought each scene
To me doth bring!

[MOLLIE E. MOORE.

RUSKIN ON WAR AND WOMEN.

Mr. Ruskin, at the close of a recent lecture on war, addressed to the Royal Military College, Woolwich, made the following remarks to the ladies present: "You may wonder, perhaps, that I have spoken this night in praise of war. Yet truly, if it might be, I, for one, would fain join the cadence of hammer-strokes that should beat swords into plow-shares; and that this cannot be is not the fault of us men. It is your fault. Wholly yours. Only by your command, or by your permission, can any contest take place among us. And the real, final reason for all the poverty, misery, and rage of battle throughout Europe is simply that you women, however good and religious, however self-sacrificing for those whom you love, are too selfish and too thoughtless to take pains for any creature out of your immediate circles. You fancy that you are sorry for the pain of others. Now, I just tell you this, that if the usual course of war, instead of unroofing peasants' houses and ravaging peasants' fields, merely broke china upon your own drawing-room tables, no war in civilized countries would last a week. I tell you more, that at whatever moment you choose to put a period to war, you could do it with less trouble than you take any day to go out to dinner. You know, or at least you might know, if you would think, that every battle you hear of has made many orphans and widows. We have none of us heart enough truly to mourn with these; but, at least, we might put on the outer symbols of mourning with them. Let but every Christian lady who has conscience toward God vow that she will mourn, at least inwardly, for His killed creatures. Your praying is useless, and your church-going mere mockery of God, if you have not plain obedience in you to your conscience. Let every lady in the happy classes of civilized Europe simply vow that, while any cruel war proceeds, she will wear black—a mute's black--with no jewel, no ornament, no excuse for an invasion into prettiness. I tell you again, no war would last a week.

LEGISLATING AGAINST NATURE.—The following, from the pen of Abijah Wilkerson, in *Hearth and Home*, is sensible, if not elegant:

"We've wiped out all the differences on the color question, so far as law 'll do it; and when we've wiped out the sex question, as there seems a likelihood of. I suppose we shall take to wipin' out the age question; and if I should live long enough—and I hope to heaven I shan't—I shall expect to find a sarsy gal of sixteen layin' down the law to me. The Lord has put us through his mill in one shape, and we keep grinding ourselves over to make ourselves better. It's my notion that we shall have pretty small grist of it before we get through. The bad conditions we are born to, whether from havin' an ugly color, or a short leg, or a wrong sex, or a polypus in the nose, a'n't one-half so bad, to my notion, as the bad condition we put ourselves into by trucklin' to the great corporations that browbeat us, and to the politicahucksters that are makin' game of us.

ROSES.

I have placed a golden
Ring upon the hand
Of the blithest little
Lady in the land.

When the early roses
Scent the sunny air,
She shall gather white ones
To tremble in her hair.

Hasten, happy roses!
Come to me by May!
In your folded petals
Lies my wedding day!

[*Thomas Bailey Aldrich.*

Hygiene and Household Economy.

HOW TO MAKE PICKELS.

Editor of The Rural Carolinian:

In looking over your June number, I discover an appeal for suggestions as to the method of *preparing pickles*, as usually sold in *grocery stores*, being superior to those of *domestic manufacture* usually.

Feeling that I am *rather fastidious* in regard to things usually for table use, I venture to send you a recipe which has been tested for many years by my own family and innumerable others, and induced the discarding of all other methods, ensuring (if rigidly attended to) *crispness*, *greenness*, and *flavor unsurpassed*. If you think favorably of it, please give it an insertion.

1. Green Pickles.—Put cucumbers, peppers, etc., (*medium size,*) in *vinegar* and *salt*, with a lump of *alum*, (the size of a small egg,) to three (3) gallons good vinegar. In this you may let them remain two or three weeks if necessary. Pour off this vinegar into your kettle, and let it come to a boil. Having placed your pickles in stone jars, with layers of *green* cabbage leaves between them, leave them one week, having poured the *boiling vinegar* over them. At the expiration of this week pour off the vinegar and sprinkle through them *green* ginger, *horse radish*, *English mustard seed*, *whole pepper*, (white,) a *small* quantity of *whole cloves*, *allspice*, a clove of garlic and *cassia-buds*. All of these spices are to be secured in a *thin*, but *strong muslin* bag. Leave them another week after a second scalding, as before. Should it be necessary to *hurry* them for *use*, you may let the pickles remain in for a *scald*, *merely* (by no means a *boil*) to hasten them, but it is quite as well to avoid this. Keep them closely covered in a cool place, in wooden firkins or stone jars.

2. Yellow Pickle.—To 2½ gallons of vinegar, add 7 lbs. brown sugar, 1 bottle English mustard, 1 lb. scraped horse radish, 1 lb. English mustard seed, 1 lb. ginger, ½ lb. white pepper, 1 lb. Turmeric, 2 oz. nutmeg, 2 oz. allspice, 2 oz. mace, 1 oz. cloves, 2 oz. celery seed, 6 sliced lemons.

Half the quantity is enough for most families. It is similar to piccalilli or *chow-chow*, and is designed to include every thing that is susceptible of being pickled; *beans* of all kinds, *okra*, (*young,*) *radish pods*, *young peaches*, gherkins, tomatoes, etc.

The spices to be pounded, if whole, before putting on vinegar.

Scald in a strong brine two dozen large white onions, salt them for a day, drain and wash them in plain vinegar before putting them in the spiced vinegar; cut a firm cabbage in quarters, scald in a strong brine until you can *run a straw* through it, drain it one day, and put on plain vinegar two weeks, then drain again before putting on the spiced vinegar, then add *all ingredients* This makes about five (5) gallons of the pickle.

3. Pickled Onions.—White button onion, *peel* and *steep* in strong salt and water four days, changing two or three times, *wipe quite dry*. Pour over them scalding milk, leaving them to cool in it. Drain and dry each on a cloth, then place in jars. *Boil white wine vinegar* and pour over them. Add small bits of mace (whole *blade mace*) *sparingly*, and bits of red pepper. Tie the mouths of the jars with a *wet bladder*, then leather over it. Keep in a cool place, and you will be sure of approving and enjoying the pickles.

4. Pickled Oysters—(Excellent.)—Wash and hang over the fire with just enough water to cover them, (very little if there is liquor enough.) To 100 large fresh oysters, a *very small handful* of salt. Let them come to a scald to *swell* them; watch they are not in too long; remove carefully with a skimmer and place on flat dishes. Having strained the liquor, add one-third part vinegar, *whole white* pepper, allspice, and blade mace; let it boil up, and pour over the oysters in stone jars. Ready for use in forty-eight hours.

5. Mayounaise Salad Dressing—(Delicious.)—Beat together yolks of two raw eggs and juice of one lemon, slowly adding olive oil, very little salt; or, (another,) one salt spoonful dry mustard, a little salt, oil gently added, two raw yolks of eggs, and, when all is creamy, at last one teaspoonful Tarragon vinegar.

I have tried some of the receipts from your publication, and found them most reliable. Its suggestions *moral* and *hygienic*, are quite to the taste of a resident of

Edgewater, Staten Island, N. Y.
June 6th, 1870.

We shall be glad to hear often from our kind friend at Edgewater, who we are sure is a notable housekeeper.—Ed.

RECIPES.

Apple Dumplings.—1. Pare large, sound, sour apples; cut out the core and fill the center with butter and sugar, mixed; cover each apple with a good short crust and bake quick. Serve with sweetened cream or wine sauce.

2. Beat two eggs thoroughly, add one-half cup of sour milk, a piece of butter size of an egg, and one-half teaspoon of saleratus; stir in flour until the batter is about the consistency for griddle cakes. Pare and slice half a dozen sour apples; put them in a dish and pour the batter over them. Bake quick and serve with sweet sauce.

How to Clear Muddy Water.—A comparatively small quantity of alum will clear muddy water. A piece as small as a hickory nut, or even less, according to the impurity of the water, will precipitate the dirty coloring matter into a pailful of water. It has simply to be dissolved, stirred and left to settle. This method is frequently adopted along the Missouri and Mississippi rivers.

Baked Tomatoes.—Peel and mince enough to fill a quart dish; season them with sugar, mace, pepper, salt, and a little minced onion. Put a layer of crumbs upon the bottom of the dish, then a layer of tomatoes, a little butter; another of bread crumbs, until the dish is full. Bread crumbs must be strewn thickly over the top: lay over bits of butter. Bake in a moderate oven two hours.

Sweet Bread.—Prepare the yeast as for the above; when risen beat up two eggs and one cup of sugar, and pour with the yeast the whole into three pints of flour; if too stiff add a little warm water. Bake slowly.

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No editorial notice given to advertisements on any consideration. Nothing paid for inserted in reading matter.

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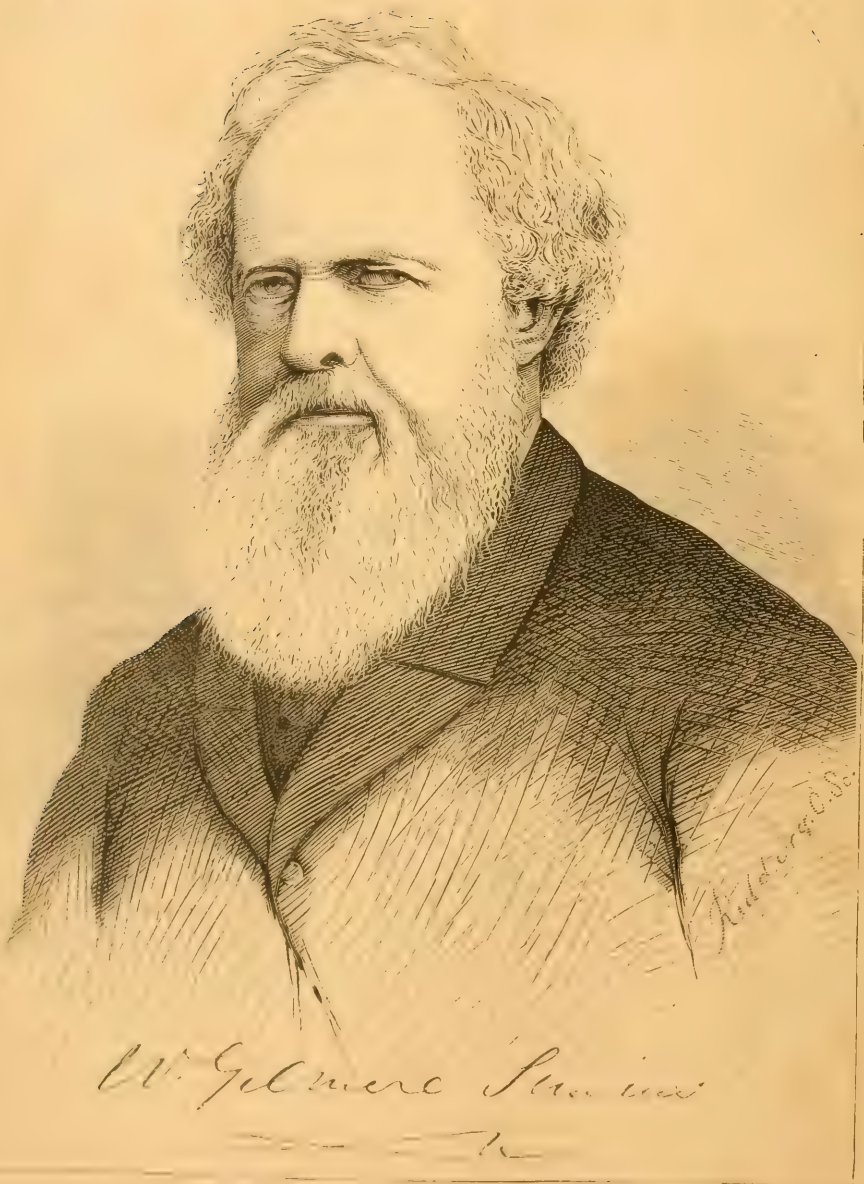

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THE

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William Gilmore Simms and his Works.

We shall not anticipate the work of the biographer by attempting any detailed account of Mr. Simms' career. A very brief statement of a few of the principal incidents of his life, however, will not be out of place here.

William Gilmore Simms was of Scotch-Irish descent on his father's side, and was born in Charleston, S. C., April 17th, 1806. His mother, whose maiden name was Singleton, was of Virginia stock, but the family had removed to South Carolina before the Revolution. She died while he was an infant, and his father, failing in business, removed to Tennessee and afterwards to Mississippi, leaving his son in the care of a grandmother, in Charleston, where he received an education which the straightened circumstances of the family rendered very limited. How well, in after years, he supplied the deficiencies of his early training, those who knew him or have read his works need not be told.

It was at first designed that he should adopt the medical profession, and he was for several years employed in a drug store in Charleston; but at the age of eighteen he quitted this occupation and commenced the study of the law. At twenty, he was married, and on his twenty-second birthday was admitted to the bar of South Carolina. He soon wearied of a profession little suited to his tastes, and in 1828 became editor and part proprietor of the *City Gazette*. This venture in journalism involved him in heavy losses, and, in 1832, Mr. Simms found himself nearly penniless and involved in debt.

Having, about this time, lost by death his grandmother, his father and his wife, he visited the North, where he spent a summer preparing for the press the great poem, "Atalantis," on which, more than on any other single performance in verse, his poetical reputation now rests. It was published in 1832 by J. & J. Harper, New York, and was soon followed by "Martin Faber, the Story of a Criminal," brought out by the same publishers. This was the initial volume of that long series of works of fiction, which have made his

name a household word wherever the English language is read and the mere titles of which would fill one of these pages.

After his second marriage, (with Miss Roche,) Mr. Simms retired from Charleston to his plantation, Woodlands, near Midway, S. C., where he devoted himself to rural affairs, in connection with the literary labors, which had become the grand business of his life. Those who, like the writer, had the honor of enjoying there at once the generous hospitalities of the Southern planter, the entertaining and instructive conversation of the cultivated man of letters, and the ready sympathy, cheerful encouragement, and wise counsel of the ever faithful friend, will never forget the well-built old mansion, the priceless library its owner had accumulated there, or the charming surroundings of lawn, garden, field and forest, much less the noble-hearted, genial and gifted master of the house.

Mr. Simms occasionally mingled in politics, was a member of the Legislature of his native State, and on various public occasions delivered addresses which will vindicate his title to fame as an orator; but he was too honest and out-spoken to win success as a politician.

Mr. Simms had great taste for rural pursuits, and especially for horticulture, delighting in the æsthetic aspects of life in the country, and the cultivation and beautifying of one's fields, gardens, lawns and avenues. "Model Farms, or the Picturesque in Farming," in The Rural Carolinian, and his last public address on "The Sense of the Beautiful," before the Charleston County Agricultural and Horticultural Society, embody some of his best thoughts on these themes.

During his declining years, Mr. Simms was smitten by many afflictions—the loss of wife and children; the destruction by fire of his country house at Woodlands, with his magnificent library; the impoverishments of the war; and finally, a lingering and painful disease, but against all he bore up with more than Roman fortitude, inculcating courage, patience and hopefulness to the last. Among his latest poetical productions were his "Lays of Encouragement," published in The Rural Carolinian. And thus he passed away, bidding us be strong, and self-reliant, and hopeful, and leaving us the lesson of a busy, well directed and upright life. Being dead he yet speaketh:

> "Oh, boy! man! what a world is in the keeping
> Of him who nobly aims and bravely toils;
> Speed to the work! We'll all have time for sleeping
> When we have shuffled off these mortal coils."

Of Mr. Simms' works we have room to speak only in a general way. The novels and romances, through which he is and will continue to be best and most widely known, are generally historical in their data, and the incidents, which are meagrely stated in ordinary narrative, are, in these works, amplified and rendered attractive by the writer's consummate art,—fiction, as it were, giving vitality to history. In fact, the great body of our people have been more thoroughly taught their own annals and the achievements of their ancestors through these volumes, than through the various so-called histories

of the South, which comparatively few have read. In this respect Mr. Simms has done for the South what Scott did for Scotland, and Cooper for New York. In regard to South Carolina alone his fictions have given her people an illustrative gallery of history and biography such as no other State in the Union can boast. In support of this statement we need only refer to the well-known novels—"The Partizan;" "Mellichampe;" "Katharine Walton;" "The Black Riders of the Congaree;" "The Scout;" "Woodcraft;" "The Forayers;" "Eutaw" and the "Cacique of Kiawah."

Of strictly historical, biographical and descriptive works relating to the State, we have "The History of South Carolina;" "The Geography of South Carolina;" "South Carolina in the Revolution;" "The Life of Marion;" and "The Life of Greene."

Florida is illustrated in "The Lily and the Totem" and "Vasconsolos;" Georgia in "Guy Rivers;" Alabama in "Richard Hurdis;" Mississippi in "Border Beagles;" and Kentucky in "Beauchamp."

Among the best of Mr. Simms' novels, not one-fourth of which we can even name here, we would place "The Yemassee;" "Vasconsolos;" "The Partizan;" "Mellichampe;" "Woodcraft;" "Katharine Walton;" "The Forayers," (and "Eutaw," its sequel;) "The Black Riders of the Congaree; "Guy Rivers;" and the "Cacique of Kiawah."

In biography Mr. Simms' "Life of Chevalier Bayard" and "Life of Francis Marion" are among the best writings of their class.

It has been the custom among critics to deny Mr. Simms a position among the great poets of the country. From this dictum we dissent most emphatically; but must admit that his poetry is not popular, and is not likely to be in this generation. The purely imaginative character of most of his poems, together with the vein of metaphysical philosophy which runs through many of them, are fatal to their success in this sensational and superficial age and country. This was not the fault of Mr. Simms, but is the misfortune of his contemporaries.

The *North American Review*, in an estimate of Mr. Simms' genius as a novelist, says:

"We recognize in his writings, in a superlative degree, the power of picturesque description, the imaginative conception of character, the nice delineation of its delicate shades, the ability to deal with subtile and violent passions, and the skilful arrangement and development of intricate plots. The range of the characters he presents to us reaches from the highest to the lowest, including almost every variety; and he seems to be equally at home with them all. They are all genuine flesh and blood; and we become interested in them, as though they had been our friends and neighbors, so natural and living are their movements and speech before us. The graceful and delicate forms of human feelings are treated with entire appropriateness."

Mr. Bryant, in the New York *Evening Post*, says: "In all his writings, from first to last, during a literary career of more than forty years, he was conscientious and consistent, always mindful of the dignity of his calling, uniformly honest, pure and high-toned."

The intense intellectual activity of Mr. Simms, together with his industry and regular habits, enabled him to accomplish an amount of literary labor truly astonishing. The list of his published works comprises more than forty volumes, some of them requiring great labor and extensive research. To his intellectual gifts he added a brave, generous nature, a genial disposition, and manners singularly frank, unconventional and ingenuous. His engaging social qualities endeared him to a large circle of personal friends in all portions of the country, and our people universally feel that one of our greatest and best men is gone. May the lesson of his useful, noble and blameless life sink deeply into all hearts.

The Small Grains.

Every Southern planter should determine to sow a remunerative small grain crop this fall, and he who does not do so will lose a handsome percentage upon his plantation investment. Every "big crop," however, is not a paying crop. To sow valuable and high-priced small grain on roughly prepared land is bad economy, simply because the increased yield always repays for thorough preparation. I am aware it is futile to advise planters to sow a smaller area, and increase by thorough culture the yield per acre; and, possibly, they are wise in not at this time listening to such advice, for where land is cheap, and laborers both scarce and inefficient, and trained too to performing their work in a helter-skelter manner, it may be extravagant to attempt scientific farming on a large scale. Labor, scientifically directed, will at a certain cost produce thirty bushels of wheat per acre; with perhaps less cost, and certainly with less trouble to the planter, an ordinary field hand, after the old style, will sow and reap from three acres about the same number of bushels. Hence the planter who sows, surrounded by demoralization, is apt to sow for the present, and adopt that system which taxes least heavily both his patience and his pocket. He who looks to the future, expects to improve his land, and determines to transmit to his heirs an inheritance of increasing value, will pursue a different policy, and while he curtails his area will increase his yield.

To accomplish this, the land to be sown in small grain must be as thoroughly prepared as if for a cultivated crop. Deep turning of the soil should be avoided, and deep breaking be the end desired. An ordinary shovel followed in the same furrow by a two-horse, or even one-horse Brinly, Utley or Murfee subsoil, will repay as well in small grain as in cotton or corn. If stubble or fallow land is to be re-seeded in small grain it should this month be "turned over," the subsoiling may be done at the same time or postponed until sowing time. This subsoiling, if *properly done*, prevents winter drowning as well as suffering from drouth in the spring. In plowing under weeds, if a heavy chain be attached to the two ends of the double tree, and allowed to drag back just to the point of the plow, the work will be very complete.

Small grain should never be manured with stable, cow-house or compost manure, simply because they all contain stray grains which will surely germinate and mix the crop. Land that was manured from the stalls of stock fed on oats, and sown in wheat, will produce a mixed crop of oats and wheat. Cotton seed sown broadcast, fifty bushels per acre, and plowed in with the grain, is a specific manure for wheat. Commercial fertilizers pay well on any kind of small grain; one-half should be sown broadcast and plowed in with the grain, the other half should be sown on the grain in January or February.

Many planters wishing to "rest" a field sow it in small grain, plowing across the cotton and corn beds, and think the stubble will prevent washing. This is a mistake. If a field be cultivated in corn or cotton horizontally, to rest it the land when sown should be plowed as the rows run, otherwise the washing will be more injurious than if the beds had been left and no small grain sown. *Horizontal* furrows, fifteen inches apart, heavily manured and drilled thickly in small grain on hill-sides, will so completely prevent washing, both while growing and when in stubble, that the entire hill-side may be covered by the following fall with innumerable little terraces, each fifteen inches wide.

I propose giving my experience since the war with small grain, (expressed neither botanically nor scientifically,) and will begin with

WHEAT.

On as many kinds of soil I have experimented with five kinds of wheat. Stiff red land invariably produced the best crop and heaviest grain. Of the five varieties, a large white wheat, introduced from Virginia, has been the most productive. It has a strong, large stalk, slightly blue, resembling the old blue stem or Mogue Wheat. Flour from this wheat cannot be surpassed. It is neither a late nor early wheat, and seldom suffers from rust.

For two years I have sown a small, plump white wheat, originally from the Patent Office, which resembled in stalk, head and grain, the white Virginia, but matures later. Three acres of land, that has been in cultivation since 1800, produced of this wheat this season forty-six bushels.

Last season I sowed two bushels of Boughton Wheat, that produced well, but took the rust in spots and matured very late. This is a decided objection to any grain, for they should all ripen so as to be harvested after "chopping out" cotton, and before "laying by" corn. These three varieties of white wheat seem this year to have become reddened in appearance, perhaps from the unusually dry spring; or, perhaps, climatic influence has this natural tendency.

In 1866, I received from upper New York ten bushels of beautiful white wheat, sowed it on good wheat land highly manured and well prepared. Yield, about half a crop. The next year only five acres were sown on land similarly prepared; yield, almost nothing. In 1868, an acre was sown, and not one in twenty seed germinated, and not a bushel matured. This experiment suggests its own inference.

For two years I have sown a large, heavy, dark red, uninviting-looking bearded wheat, originally from the valley of Virginia, that yields well, weighs heavily, and produces a dull gummy flour, by no means first quality. This wheat grows tall, matures its stalk many days before its head, and looks when ripe as if it were badly injured by rust. Though neither rust nor excessive wet or dry weather seem ever to affect it.

The most satisfactory wheat I have ever sown is a small, round, plump red grain, known as the Fuller Wheat in this section, because greatly improved by a neighbor of that name. It is the Clarke or Alabama spring wheat, and matures very early. I have harvested it by the 15th of May. For ten years it has never failed to make a good crop, and yields as good flour, and as much of it, as any wheat I have sown.

By the middle of July, all wheat should be threshed and thoroughly sunned; while hot it should be sprinkled with salt, and put in close bins or covered hogsheads. Sassafras rods run through or into the wheat will drive out any weevils that may have attacked it, and prevent their return. Wheat is, perhaps, less profitable as a market crop than any of the small grains, though no planter should ever *buy* for his family or employees an ounce of flour. Wheat straw is considered valuable winter food for cattle by many planters. I make no use of it except to run it through my stables and cow-house, or to mulch garden vegetables, potatoes, or fruit trees. Wheat should be sown in October; the earlier the better.

RYE

is a grain not sufficiently appreciated in the South. It is about as productive as corn, bushel for bushel, and, if sown in September, makes the best possible winter pasture, which, however, milch cows should never be allowed to taste, as the peculiar flavor of the rye is communicated to the milk. Rye straw is a valuable winter food for cattle, and when cut up and sprinkled with the rye meal, makes a most nutritious food for any kind of animal. The poorest land will produce two or three bushels of rye, and good land from eight to ten. I once harvested thirteen and a half bushels from a half acre cow-pen. The coldest winter has but little effect upon this grain.

OATS

are the most valuable of all the small grains, because they furnish an economical substitute for corn in feeding all kinds of animals. The seed of the common white oat of yore seems to have been destroyed by rust.

The black oat is the heaviest, and a very valuable grain, though objectionable, because when ripe enough to cut it is a perfect touch-me-not; one-fourth the crop is lost by shattering out while handling.

The red oat will repay the planter on every kind of land, and is not subject to disease. It is very prolific, often yielding forty bushels per acre on fair land. The straw is short and tender, and if cured without being too often wet is equal to fodder, pound for pound, as winter forage for cattle or mules. I once threshed four hundred and eighty dozen bundles of red oats that yielded three

hundred and ninety-six heaping bushels of beautiful clean oats. At another time, I threshed thirty dozen, and cleaned up thirty-six bushels. Its capacity of production would not be reached at one hundred bushels to the acre. Red oats may be sown at any time from 1st of September to the following March; those sown first are usually the heaviest, though this year oats sown in January were better than those sown last fall or this spring, in consequence of the unusually dry spring. Oats sown on cotton land at the last plowing of the crop, or in September after the first picking, and plowed in with the shallow sweep furrows, will make an abundant crop, and if the land was horizontalized for the cotton crop, the oats will grow as if drilled horizontally, and thus protect the land from washing as stated above. The cotton stalks can be hacked down in the winter.

Of the celebrated Norway Oats, I know but little. I bought a bushel last fall at $9.00, and sowed them the third week in November on good land, highly manured with cotton seed. Every oat seemed to germinate, but in January about one-fourth the "stand" was frozen out. They stood the dry spring well, grew about three feet high, and have peculiarly crowded heads nine inches long, with thirty to eighty grains to the head. They were perfectly green when the red oats were harvested. They were not cut until the 6th of July, and if they are thus late in maturing will be objectionable. Their stalk is very large, coarse, and strong.

BARLEY

is also a most valuable crop, but more uncertain, perhaps, than any small grain crop. The best land should be stimulated to grow a fine barley crop. Thin land will not produce it. Cow-pens are the best spots to sow this grain upon. If sown in September, it may be cut by the 1st of January; and, unless the winter is unusually severe, it will be high enough to cut again in March, and then grow up and produce a fair crop of seed to be harvested when ripe. When used in this way it should never be grazed, but cut with a reap-hook as soon as it is high enough to grasp with the hand and cut below, between the hand and the roots or ground. The March cutting may be knee high. The effect of green barley upon work animals is most astonishing. The planter who sows a half acre of barley on land well prepared and thoroughly enriched for each mule, will never own poor, diseased, hide-bound plow-stock. Ripe barley is a very hard grain, and should never be fed until soaked for twenty-four hours.

I usually sow one bushel of wheat, three pecks of rye, two bushels of oats, or two bushels of barley to an acre of land. D. WYATT AIKEN.

Without cultivation of the earth, man is, in all countries, a savage. Until he gives up the chase and fixes himself to some place and seeks a living from the earth, he is a roaming barbarian. When tillage begins, other arts follow. The farmers, therefore, are the founders of civilization.—*Webster.*

Harvesting and Curing Tobacco.

In our February number we gave some hints on the planting and cultivation of tobacco. To make our instructions complete, so far as our limited space will permit, we now copy from an article by Christian Schneider, in the *American Agriculturist,* the following directions for harvesting and curing the crop:

Harvesting.—The maturity of tobacco is seen, if the leaves, which were green up to now, when held against the sun, show yellowish, reddish or brownish spots, feel sticky, and when bent break off short and clean. Before this period sets in, the *drying-house* should be in good order. The house is built to give room for the free hanging up of the tobacco, so that it is protected from the sun, wind and rain, and is allowed to dry by the free circulation of the air. Any building, therefore, will answer which has a good roof, boarded sides, and enough windows and air-holes (which can be closed at will) to keep up a mild circulation of air inside, and also to keep out strong and too quick drying winds. If the tobacco is grown on a large scale, the house should have large doorways to drive a wagon in and out. There must be sticks all over the house, either cross or lengthwise, and these sticks must be ready and in their places. Now the work of harvesting the crop is commenced on a clear or cloudy, but not rainy day. The mature plants (those not ripe are left longer on the field if not too late in the season) are cut off near the ground, two of them tied together by the butt-ends, and hung up in the field on riders, which rest on two forks fastened in the ground, and they are left there until evening to wilt; then they are brought to the drying-house and hung up. The tobacco is hung up on the upper sticks first, and the work continued downward; care is taken that the sticks are six to eight inches apart, also that the plants are not too near together on the sticks, because the air should have free passage among the plants, and when they touch or rub against each other, unsightly spots are produced. The sticks must be pretty wide, so that the two plants which are tied together, and one of which hangs on each side, are held well apart. Later, when the tobacco has dried off somewhat, the sticks and plants may be moved a little nearer to each other; but the plants on the upper sticks must not touch those on the lower; they should be so arranged that one lower stick is just in the middle of the space between two upper ones.

Another method of harvesting may be followed by those who cultivate tobacco on a small scale, or who have hands and time enough. As all the leaves on the plant do not ripen at the same time, but the under leaves are always a little earlier than the upper ones, they may gather the crop in the leaf, that is, taking only the matured leaves from the stalk; this must be done daily, and so long as there are leaves on the stalk. In this way the crop will be harvested slower, and it will cost more, but the tobacco will be of more even quality and better. The leaves are strung on strings instead of being hung up on sticks, with the same care and precautions as recommended for hanging up the whole plants. After the leaves are off, the stalks must be cut off or pulled up, for they would still vegetate, and needlessly take away nourishment from the soil.

No more tobacco leaves or plants should be cut than can be taken to the drying-house and hung up the same day. Mild, clear weather will be beneficial for drying; strong and rough winds will do it too quick, and wet, damp weather will hinder it altogether. Should the latter continue for some time,

the place of the sticks or strings must be changed, and if, notwithstanding this, the tobacco gets mouldy, it must be "fired." A fire is built in one or more excavations in the ground of the house, and the heat and smoke are allowed to go as evenly as possible through the plants. Care must be taken that the fire does not get too near the tobacco, so that it gets singed or burned. The place directly above the fire should, therefore, be free of tobacco. Stoves, with pipes to convey the smoke (which is of no value in drying) outside of the house are still better. The heat in the house may be kept up to eighty or ninety degrees.

The best arrangements for drying will not be of much avail unless the tobacco has been fully matured before harvesting, for if this has not been the case it will never lose the well known "green taste," and no after manipulation, no drying or sweating will free it.

Curing.—When the leaves are dry, which is seen when the stems become of a brown color, and break when bent, the next work is to make *tobacco* out of them, for up to now we have nothing but a tasteless, dry weed. Its hidden qualities must be developed. This is done by a process of fermentation, the *sweating of the tobacco.*

The leaves are broken one by one from the stalks, in damp weather, (otherwise they would break,) stretched out nice and even, and, with the ends in the same direction, put up in heaps. These heaps, of which every workman makes one, are afterwards put into one or more large conical heaps, from four to six feet in diameter at the base, and from one and a half to two feet at the top. These are covered with woollen blankets, straw mats, or anything that will press the heap lightly and shut out the air. In twenty-four to thirty hours a fermentation sets in, the heap gets warm, and when it is so hot inside that the hand cannot bear it very well, the heap is broken up and packed over again, pulling the tobacco that had been outside upon the inside, and *vice versa*, and treating the same way as at first. In such heaps the tobacco remains twenty to forty days, until all the heat is gone; then the heaps are again broken up in damp weather, the leaves tied up in bundles of one-half to one pound in weight, stretched even and packed in boxes or hogsheads, pressed tightly and covered. Now the tobacco is done—is a salable article.

The process of sweating must be conducted with every possible care, for on this depends the color of the tobacco, and in a large degree its fine flavor. If the fermentation is too strong, the tobacco gets black, and the flavor is driven out; if too little fermented, the color remains green and whitish yellow, and the flavor is not developed.

Those who raise the plant principally to get wrappers for cigars will need to sort it.

Sorting is done right after the last breaking up of the heaps, and consists in laying the damaged leaves apart from the whole ones; and these again are separated, according to color or other qualities, for wrappers, into two, three, or four different kinds, so that every variety is of the same quality and color.

First quality—Color, dark brown; even over the whole leaf.

Second quality—Color, light brown; even.

Third quality—Color, dark yellow; even.

Fourth quality—Color, light yellow; even.

Fifth quality—Color, green, black, whitish yellow, spotted.

The first four kinds include the larger leaves, while the smaller ones go into the fifth quality.

Every kind is bundled by itself. This work is not difficult, and increases the price considerably. The first three sorts, and even the fourth, may be sold as wrappers, which bring the highest price. The fifth is mixed with the damaged leaves together, and sold for fillers, or chewing tobacco and snuff.

Hints on Rice Culture.

The question is frequently asked me, as I am riding around crops, after the long water has been turned off, why such and such a field has turned red and does not grow? And I have been as often amused to hear the variety of opinions expressed on the subject. One, would assign alum as the cause; another, cold winds; a third, deep water, etc.

Now, according to my theory, if the nature of the land will admit of it, and the lands are not too grassy and difficult to manage, water is the remedy, and the only one I know of, to destroy grass cheaply and effectually. It should be used at an early stage of the crop, or just so soon as you can see your rice from bank to bank, and before the grass gets too old and tough to be killed out by water. I never regard the number of days that the water is said to remain on the rice, for the difference in the temperature will shorten or protract the time; and so will shallow or deep water.

Now, if the fields are not of a dead level, and few of them can be supposed to be so, the water must be deeper on some portions of the fields than on others; or, the water may be deeper on some fields than on others; and the rice will be retarded or advanced accordingly—the shallow places being always the most forward.

The *remedy* for *grass*, as I have said before, *is water* in the *early stage* of the *crop*, and *before* the *grass* gets so *large* as to *defy* the *effects* of *water*.

My plan is to top everything, "head and ears," as soon as I can walk over my crop, and judge of the stand, and to keep it so for six or eight days, or until the rice is sufficiently stretched. I then slack down the water until I can trace the rice in the lower portions of the field, set a mark, and keep the water as steady as I can, and allow the rice to grow out of the water, which it generally does in from six to eight days, and continues to grow until it has got the full growth of the growing leaf out. It will now take a slight check, but it is only throwing out new roots, and will soon grow again. Now is the time to hold your water with the greatest tenacity. In about fifteen or twenty days time it will again look droopy, and present a sickly appearance; and if you take the trouble to pull up the stalk and examine the roots of the plant, you will find them all exhausted or dead. They have accomplished all that nature designed for them to do. You will see, too, that nature is not unmindful of her work, and that she is preparing a fresh crop of roots for the further development of the plant. This is the most critical stage of the crop, and upon your nerve and patience depends your success. Nature is performing her work; wait on her, and she will do it well. Turn your water off at this stage of the crop, when the old roots are exhausted, and before the new ones have taken their place, and you will have red rice, or, as *planters* term it, *fox rice*, to your heart's content. But if you will let nature perform her work, which she will always do if you wait on her, you will soon see your rice growing again; and when the lower portions of your fields, which are

always the most backward, have fairly started, you can with impunity let your water go off, but very slowly, so as not to throw your rice down. There is now no danger of its turning *red*, or being *foxed;* for it will assume now a healthy and vigorous growth. But as water cannot do everything, and neither rice nor grass can be expected to wait on you, be ready with your hoe, for a full crop depends chiefly in meeting all the demands made upon you in time; and just as soon as the land is dry enough, which will be in from four to six days, get in with your hoes, and see that the work is not slighted. Hoe short and as close to the rice as you can get without getting in the trench; let the land be well stirred, and give the rice air as rapidly as possible.

Your crop now will have a strong, vigorous growth, and will continue to grow rapidly, gliding from stage to stage almost imperceptibly. Yet the practiced eye delights to follow it through all the different stages which nature has assigned it, and it will be fit now for the most sceptical to see.

In from twenty-five to thirty days after you have turned off your long water, your rice will be putting out the seventh leaf, which is the joint leaf, and after having given it another hoeing, if practicable, it will be ready for the joint, or lay by water, which change as often as circumstances will admit, until your rice is ready for the sickle. Now will be the time to save your crop and turn it into money; and as great loss always attends *over-ripe rice*, and the quality is materially injured, the harvest cannot be pushed ahead with too much vigor.

This is the whole secret of successful rice planting. But he who will not be governed by the laws of nature will never be blessed with a full yield.

JAS. C. McCANTS.

North Santee, June 17th, 1870.

Professor Volckner on Artificial Manures.

Professor Volckner, the distinguished agricultural chemist, lately delivered a lecture before the Derbyshire (England) Agricultural Society, in which he made special reference to artificial manures. From this lecture, which we find reported in the *North-British Agriculturist*, we condense the following:

FARM-YARD MANURES.

It was not by any process of cooking or of turning over that they could obtain good manures; they could only secure them by incorporating the right materials. There was a time when a mistaken notion prevailed that farm-yard manure should be turned three times, and that it got better every time. Now there was, as was generally the case, a little truth mixed up with the error involved in that idea. To turn manure helped to make it rotten, and rotten manure was better than fresh, bulk for bulk; but by its standing exposed it was apt to lose a great deal of its fertilizing properties, and the more economical plan was to cart the dung to the field as soon as possible, and then they avoided the risk of losing a portion of its valuable properties by evaporation or by drainage. They knew well that the value of animal

manure depended very much upon what they put into the animal's belly, and that it would be very different if they used plenty of oilcake, or other rich food, than if they gave their stock an insufficient amount of poor food.

PERUVIAN GUANO.

The fertilizing value of guano depended essentially on the amount of nitrogenous matter, which was measured by the amount of ammonia it yielded. The fertilizing value of guano was declining. Formerly it would oftener contain 17 per cent. of ammonia, but that was a great rarity at present. A few years ago they might fairly have expected 16 per cent., and often 17 or 18 per cent., with very little insoluble silicious matter, which was only a long name for their old friend sand.

DETERIORATION OF GUANO.

Peruvian guano was getting less and less valuable, and if they could this year get it from the government directors' stores to yield 15 per cent. of ammonia, they would have no reason to grumble, and they would have a good chance of getting only 13 per cent. The manufacturers knew well the difference in the value according to the yield of ammonia. Each percentage of ammonia in a ton was worth 12s. to 15s., so that the difference between 13 per cent. and 16 per cent. would be at least 36s. in value. If they paid £14 per ton for guano yielding 16 per cent. of ammonia, which they might fairly expect to do, they ought to pay 36s. less, if the yield was only 13 per cent., all the other circumstances being equal; and he had no hesitation in saying that many a farmer had paid too dearly for Peruvian guano. The importers could always sell the good guano to the manufacturers, and he was not sure whether farmers could not now often buy prepared artificial manures more cheaply than Peruvian guano.

TESTS OF GUANO.

Genuine guano was light in color; it had not a pungent but an aromatic smell, and a cheesy flavor when tasted, which was derived from the undigested fish on which the birds fed, and which disappeared when it had been washed by the sea. The inferior guano was discolored, and was generally of a darkish brown, somewhat like the color of varnished oak when neither very new nor very old, and invariably lost the peculiar taste to which he had referred. Inferior guano always weighed more in proportion to the bulk than the best. It should not exceed sixty-eight or seventy pounds per bushel. By applying those tests every farmer could tell whether the article was genuine or not. He had had many samples of guano direct from the importers, and from respectable dealers, which contained twelve or fourteen per cent. of sand.

ADULTERATION OF BONE-DUST.

No manure had been adulterated so much as bone-dust, and it was extremely difficult to get it at the present time. Four-and-a-half or five per cent. was the proportion of ammonia contained in one hundred pounds of genuine bone-dust. For manuring pasture land he preferred steamed bones to boiled bones, on account of the steam removing the fatty matter from them, which matter had an injurious effect, preventing the decomposition of the bone-dust. Fresh bones, when sown upon pasture, took many years to come into active play; but if thrown into a heap, and a little wet applied, heat was generated, producing ammonia, which united with the greasy matter, and would prove much more efficacious than bones immediately applied from the butcher; for the fatty matter, in the shape of soap, did not prevent the rain from finding access to the bones and dissolving it rapidly.

THE SUPERPHOSPHATES.

With regard to the value of another manure, superphosphate, they must give as much as it was worth. It would be necessary to handle it to judge its value, but there was no necessity to smell at it. Speaking generally, its value was determined by the amount of soluble phosphate of lime it contained, and this amount varied considerably, and it could be manufactured at all prices. Phospho-guano was another manure, the value of which depended upon the amount of soluble and insoluble phosphates, and the amount of ammoniacal salts contained in the manufacture. Nitrophosphate was another description of superphosphate. The nitrophosphates and similar manures contained little nitrogen, and were not of the best character. In conclusion, he would allude to fraudulent manufactures, which, he was sorry to say, had been largely sold in England. He had some specimens of ammonical manure, which, upon analysis, were found to contain no ammonia at all.

HOW TO BUY MANURES.

In buying manures, he would observe that they should first ascertain what they really wanted, a rude manure, or one with which they desired to dress their wheat or barley, or to benefit their grass land. They should also ascertain the character of their land, and carefully arrange for their manure compound; and after they had done this, if they were men of observation, practical and experimental farmers, they would get a supply of the best article on the best terms possible from respectable firms—men who had a reputation to lose. And they should not be led away by testimonials pushed in their faces, and not led away by results which were put before them.

In buying guano, they should be supplied with a guarantee; and in buying bone-dust, should use the same caution. In the purchase of superphosphate, they should buy it analyzed, as it was manufactured at all prices. In buying nitrate of soda, a guarantee would also be required, and it was sold upon its merits; and, in purchasing, the strength required should be stipulated. He trusted these precautionary measures would be of use in the purchase of artificial manures.

Coffee in Costa Rica.

The manner of cultivating the coffee plant varies but little in the various Central American States, and a sketch of how it is done in Costa Rica will be interesting to all coffee drinkers, as well as to our patrons in Florida and elsewhere who may contemplate growing the crop.

The coffee-beans are first planted in hot-beds, from which, in a few months, they sprout and shoot up five or six inches high, when they are removed singly, and taken to the fields which have been prepared to receive them. There the young sprouts are planted anew, in rows, with a space of from four to six feet between each plant. For two years they need no more care, except an occasional plowing out of the weeds which spring up around them. The third year, the plant is from three to four feet high, and commences to bear, producing about a pound of coffee fruit. Each year adds to the size and productiveness of the tree, till it reaches about ten feet in height; after which it gives a product of from twenty to thirty pounds of green fruit.

The coffee fruit resembles in shape, size and color, a plump cranberry, and grows clinging closely to the small, lateral branches of the tree; so that the

hand can strip off at once the fifty or more berries a branch may bear. On some plantations the trees are dwarfed, for the double purpose of increasing the fruitage and facilitating the picking.

The time of picking the crop varies, according to the locality, but ranges, on this coast, from December to March. When the fruit is ripe, all hands are employed—men, women and children—and, as fast as picked, the berries are sent to the mills, which, arranged something like corn-shellers, remove the pulpy coverings—leaving the kernels, which are immediately spread out in the sun to dry. At this time the skies are watched carefully, and, in case of rain, the kernels are rapidly gathered under shelter, as rain upon them, while drying, would cause an irreparable injury; and, on some plantations, machines for drying by hot air have been introduced. After a few days in the sun, the kernels become dry and crispy; they are then thrown into a circular trough, and large wooden rollers, shod with iron, crush the shell, and liberate the two beans which each shell contains. The bean has still another coating—its skin—which is the hardest of all to remove, but, through long-continued attrition with the iron-shod rollers, this, also, is mostly removed, and then the fanning-mill cleans the bean by blowing away the loosened skin and broken shells.

But the most expensive part of the process is now to come. Before long tables sit the natives, young and old, chattering, laughing, and singing as they work, and on these tables are poured the beans as they come from the fanning-mill. Each Indian holds a basket in her lap, and with both hands rapidly picks out, separately, every perfect bean, till there remains on the table nothing but broken and imperfect coffee, of no value. The hands are paid, at this work, so much per quintal, of one hundred pounds, and skilful pickers make good wages. It takes 660 pounds of the fruit, as it comes from the tree, to produce 100 pounds of clean marketable coffee—and yet it pays.

Movement of Water in the Soil.

Prof. Johnson, in his recent work, "How Crops Feed," says: If a wick be put in a lamp containing oil, the oil, by capillary action, gradually permeates its whole length, that which is above as well as that below the surface of the liquid. When the lamp is set burning, the oil at the flame is consumed, and as each particle disappears, its place is supplied by a new one, until the lamp is empty or the flame extinguished.

Something quite analogous occurs in the soil, by which the plant is fed. The soil is at once lamp and wick, and the water of the soil represents the oil. Let evaporation of water from the surface of the soil or of the plant take the place of the combustion of oil from a wick, and the matter stands thus: Let us suppose dew or rain to have saturated the ground with moisture for some depth. On recurrence of a dry atmosphere with sunshine and wind, the surface of the soil rapidly dries; but as each particle of water escapes (by evaporation) into the atmosphere, its place is supplied (by capillarity) from the stores below. The ascending water brings along with it the soluble matters of the soil, and thus the roots of plants are situated in a stream of their appropriate food. The movement proceeds in this way so long as the surface is drier than the deeper soil. When, by rain, or otherwise, the surface is saturated, it is like letting a thin stream of oil run upon the apex of the lamp wick—no more evaporation into the air can occur, and consequently there is no longer any ascent of water; on the contrary, the water, by its

own weight, penetrates the soil, and if the underlying ground be not saturated with moisture, as can happen where the subterranean fountains yield a meagre supply, then capillarity will aid gravity in its downward distribution.

It is certain that a portion of the mineral matters, and perhaps also some organic bodies which feed the plant, are more or less freely dissolved in the water of the soil. So long as evaporation goes on from the surface, so long there is a constant upward flow of these matters. Those portions which do not enter vegetation accumulate on or near the surface of the ground; when a rain falls, they are washed down again to a certain depth, and thus are kept constantly changing their place with the water, which is the vehicle of their distribution. In regions where rain falls periodically or not at all, this upward flow of the soil-water often causes an accumulation of salts on the surface of the ground. Thus in Bengal many soils which in the wet season produce the most luxuriant crops, during the rainless portion of the year become covered with white crusts of saltpetre. The beds of nitrate of soda that are found in Peru, and the carbonate of soda and other salts, which incrust the deserts of Utah, and often fill the air with alkaline dust, have accumulated in the same manner. So in our western caves the earth sheltered from rains is saturated with salt—epsom salts, Glauber's salts and saltpetre, or mixtures of these. Often the rich soils of gardens is slightly incrusted in this manner in our summer weather; but the saline matters are carried into the soil with the next rain.

It is easy to see how, in a good soil, capillarity thus acts in keeping the roots of plants constantly immersed in a stream of water or moisture that is now ascending, now descending, but never at rest, and how the food of the plant is thus made to circulate around the organs fitted for absorbing it.

The same causes that maintain this perpetual supply of water and food to the plant are also efficacious in constantly preparing new supplies of food. As before explained, the materials of the soil are always undergoing decomposition, whereby the silica, lime, phosphoric acid, potash, etc., of the insoluble fragments of rock, become soluble in water and accessible to the plant. Water charged with carbonic acid and oxygen is the chief agent in these chemical changes. The more extensive and rapid the circulation of water in the soil, the more matters will be rendered soluble in a given time, and other things being equal the less will the soil be dependent on manures to keep up its fertility.

Orchard Grass.

In the catalogue of grasses adapted to the soil and climate of the South, both for meadow and pasture, this I regard as the most valuable for general cultivation from the Potomac to the Gulf of Mexico. It withstands the frosts of our most rigorous winters, and well endures the hot and frequently very dry summers, yielding a fair return for cultivation on moderately good soil, and a most abundant yield on that if well manured. It furnishes good pasturage during the winter months, and if stock be removed from it at the proper time in spring, it yields an early and bountiful crop of choice hay in May and June. So acceptable is the hay to our best judge of a good article, the well-fed and dainty horse, that if we place in the rack before him a mixture of that from clover, timothy, herd grass, blue grass and orchard grass, he will first select the stems of the latter, supposing all to have been cut at the proper stage for curing into the best forage.

This is the *dactylis glomerata* of botanists, the *cock's foot grass* of English farmers; in this country generally known by the name above, because of its adaptation to shady situations. This and blue grass are especially important to us of the South, for our forests are rapidly disappearing, and we should utilize what are left to us by clearing out their undergrowth, not suffering the axe to "hurl their oaks," and by converting them into woodland pastures for horses, cattle, sheep and hogs.

My opinion in favor of this grass is based upon experience in its cultivation, as well as observation of its growth by others in the States of New York, Virginia, Tennessee and Georgia; and that opinion is well corroborated by others. John Washington, an eminent practical farmer, of Virginia, thus speaks of it: "It will supply horses with more hay and grass in fall, winter, spring and summer, than any other grass yet introduced into Virginia. It is the only grass that grows with us all the year round, except only when the ground is frozen. It will grow on any dry land, not excepting a *sand* bank. If you want a lot always green for an idle horse to run in this will supply it; or green grass in winter for your dairy cow, this is the only grass that will furnish it. Try it on a sand bank if you can't do better."—*The Plantation.*

An Experiment in Wheat Culture.

Mr. Samuel Baily, of Maxey, Georgia, raised nearly fifty-seven bushels of wheat on an acre of ground, and this is the way in which he did it:

In the first place, the land was thin and exhausted; had been in corn the previous year, and by the use of manure he succeeded in making seventeen bushels of that crop on the acre.

About the last week in last October he broke it up with a two-horse Brinly plow. Upon this he spread broadcast six two-horse wagon loads of well-rotted stable manure, which was turned under by a cross-plowing with the same plow. Upon this he sowed broadcast two hundred and fifty pounds of dissolved bone, which was harrowed in with a two-horse revolving harrow. He then sowed one hundred and twenty pounds of wheat on the acre, and covered it with a heavy brush, dragged over it by two mules. The clods were beat down with a maul in the absence of a roller. This was on the 2d of November. In the early part of February, the wheat being then about six inches high, he sowed broadcast a top dressing of two hundred and fifty pounds of ammoniated phosphate. Late in March, when the wheat was in the boot, he applied two hundred and fifty pounds of ammoniated dissolved bone and fifty pounds of salt ground together. This was applied early in the morning on the dew, one-half the mixture first and the other half at the end of a week.

The grain was cut off with a common reap hook as it ripened in places, commencing on the 4th of June. The production of the acre was three thousand four hundred and fifteen pounds of good wheat. Mr. Baily does not know what the six loads of stable manure cost him, but the prices of the others are as follows:

250 lbs.	dissolved bone	$8 75
250 "	ammoniated phosphate	7 50
150 "	dissolved bone	10 00
75 "	common salt	1 30
		$27 55

The land was measured and the wheat threshed and weighed by disinterested persons.

Irrigating Low Lands.—The *Rural World* thinks that irrigation of our low lands, and especially those of the South and West, must of a necessity be adopted. We do not know why irrigation is not advisable, for the lesson we receive from the old countries, where inundating is practiced for fertilizing purposes, are decidedly in favor of this method of treating meadows. The *World* says:

"Irrigation and underdraining we regard as the means through which the next and most important improvement in American agriculture is to result. Experiments in these branches have been made by some of our most progressive farmers with the most satisfactory and profitable results. There are thousands of acres of meadow land situated upon the borders of our Western rivers and below the neighboring bluffs and hills from which gush never-failing streams of water, which could be conveyed upon these meadows at comparatively little expense and to the greatest advantage. Under the great heat of our Western sun, our meadows never become so permanently and compactly set with grass as they do in a colder and more natural climate, and hence our meadows would derive comparatively much greater benefit from irrigation."

Department of Horticulture and Rural Art.

My Peach Orchard.

An old gentleman who had long been famous for his good peaches, (and lived in a good peach neighborhood,) told me if I would send over to his farm he would give me an assortment of his best seedlings. He did so, and I planted them according to instructions. It was the site of an old orchard—red clay soil, long since worn out. I had cow-penned part of it, and upon the rest scattered such scrapings as I could find about the place.

The location was on a southern and northeastern exposure, occupying a sort of plateau between grounds rising toward the north and northeast.

In those days there was no such thing as budding or grafting generally practiced, and I may say, that there was very little complaint of diseased trees.

Everybody trimmed up and cultivated close to the tree. My first year's experience convinced me that most persons planted their trees too deep, and that trees out of a nursery should be cut back so as to present as little surface to the sun as possible. It convinced me, also, that if one wanted to enjoy

his fruit the orchard should not be located near the quarters or the barn and stables. The depredations of four-footed and two-footed animals would be altogether too common and persistent to admit of success.

That portion of the orchard near the quarters soon went to ruin—the part near the barn, occupying the crest and southern slope of a small elevation, has fared better. For a few years (while the trees were young) it was cultivated, and since then has been used as a sort of waste patch, in which I have sowed all sorts of grasses. It is well set in a mixture of Rescue, Yellow Clover, Red Top, Blue Grass, White and Red Clover, and has been used as a winter pasture every year, for these many years, for everything on the place but the cows. A portion of the lot (not in trees) is every year cultivated in cotton, which gives the grass a chance to recuperate and go to seed. Pigs nearly always have access. The trees are sound and healthy, and very few have ever died from the borer. You may stick a pin there.

About this time I began to learn something about finer varieties of fruits, and ordered from a nurseryman—Crawford's Early, Crawford's Late, Early Tillotson, etc., and started a new orchard nearer my house on the crest of the hill. Pruned and cultivated *secundum artem.* The trees bore for a few years, then came the borer, the yellows, curled leaf and general debility, and of the whole lot only a few seedlings planted to fill out the orchard remain to tell the tale.

But thinking "it would never do to give up so, Mr. Brown," I began another orchard on a southern slope, southwest of my dwelling, on a lighter soil, (clay subsoil,) and set it in the best trees (budded) I could procure.

The trees were a select assorted lot, put up for exhibition, and took a premium.

They were carefully planted, and the ground cultivated in peas and other light crops, until the trees came into bearing.

The trees grew off finely, and bore for a few years very well. Some of them began to show symptoms of decline, when I broke up the orchard, applied ashes freely about the roots, and drove a few ten-penny nails into the tree near the ground. I noticed the borer at work, and evidence of debility in a good many of the trees. I have fenced off the orchard to itself. Sow it down in rye or barley, and keep it as a perpetual pasture for hogs and calves.

There is an opinion that sowing an orchard to grain is injurious. I am inclined to believe it is true, but do not see why it should be if grazed off by animals regularly. If there should be further signs of decay, I shall try the sulphur treatment.

A word as to location. There is nothing certain. Sometimes the most elevated points will have fruit; in common parlance, "hit," while others will "miss;" and again a southern slope will "hit," and a northern one will "miss," and *vice versa.* All depends on some peculiarity of the soil or seasons. If the ground be broken up in the spring, the fruit is much more apt to be killed.

It is the hoar frost which kills. You may have almost any amount of freezes, sleets, and even snow, and have fruit, while a light hoar frost will sweep the orchard.

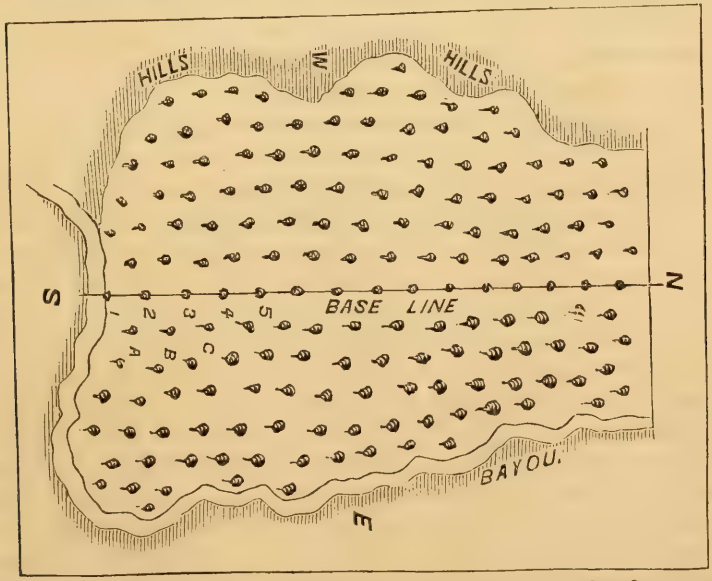
Finally, seedlings. I believe the true policy would be to select seedlings, as far as possible. The cling-stone varieties (I cannot say why) are very apt to reproduce themselves. The free-stone vary very much. I have planted twenty-five stones of free-stone variety, and found only five or six true to the original. Very few nurserymen are to be relied on. The trees do not come true to the catalogue, and very often are feeble and worthless.

It is so easy to get things mixed in a nursery, and so much depends upon irresponsible subordinates that such difficulties must often be in the way. At all events, there is no good reason why we should not regularly make selections from our own orchards, and try to improve at home.

I would impress it upon every one beginning life to plant an orchard; make good selections (not many varieties) from a Southern nursery; plant your trees carefully, and not too deep; cultivate in peas or cotton; keep the body of the tree protected from the sun as well as you can; use ashes and lime freely, and allow hogs and poultry to have free access; never allow decayed fruit to cumber the ground. I don't know whether there is any virtue in the ten-penny nail theory, but there is no harm in trying it. "There are more things in the heavens and the earth, Horatio, than you have dreamed of in your philosophy."

G.

A New Plan for Laying Out an Orchard.



Having received, during last winter, five hundred and fifty-five apple trees, and intending to plant them in *hexagon*, I examined all the books and other

publications within my reach to ascertain the best way to lay off the ground. One author directed the land to be laid off into equal squares; then to be divided into half-squares, and to set the trees alternately. Another constructed an equilateral wooden frame, thirty feet on the sides, requiring three persons to carry it, and to measure the ground. Another advised the use of a board eight feet long, having a hole in each end for a marking pin, and a notch in the middle, as a guide by which to dig holes for the trees.

I consider these and other plans too inconvenient and cumbrous, and concluded to try another mode, which I have done with ease, convenience and success. I have seen nothing like it in any of the books or periodicals, and submit it for the reader's consideration.

THE GROUND FOR THE ORCHARD

Contained about eight acres of level land, of irregular outline, the greater dimension extending north and south nearly; bounded on the east by a crooked bayou, and on the west by a range of irregular hills, as represented in the diagram.

THE IMPLEMENTS USED.

1. A hank of basing twine for a long line.

2. Five hundred and fifty-five small wooden pins, half-inch thick, eighteen inches long, procured from an adjacent cane-brake.

3. Two small wires for a measure, each twenty-one feet long, with a brass ring at the end of each, and joined together at the other end by another brass ring, being, when extended, forty-two feet long, and when doubled twenty-one feet, including the ring.

4. Three iron pins, one-fourth inch thick, twenty inches long, with a turned head for a handle.

MODE OF OPERATIONS.

Having had the land thoroughly plowed and harrowed, I set a straight row of stakes through the greater dimension of the tract; so as to divide it into two equal parts as nearly as possible. This was the *base line.* (See diagram.) I then commenced at the south end of the *base line,* at 1 in diagram, and set a wooden pin for beginning; extended twine line along the guide stakes; doubled the wire measure, measured and staked, with wooden pins, the whole length of the base line—thus dividing it into equal spaces of twenty-one feet each.

Three persons are necessary to manage the wire measure: say A, B and C. A takes position at the first wooden pin in the base line, at (1;) and B does the like at pin (2;) and C, on the east, at (*a,*) with his iron pin inserted through the middle ring of the measure. A and B insert their iron pins through the end rings, and pass them firmly and perpendicularly into the ground close to the wooden pins. Then C draws the wire measure uniformly taut, and marks the apex of the triangle with his iron pin, and inserts a wooden pin in the place. Thus, an equilateral triangle is measured and marked, each side being twenty-one feet. The parties then take up. A

advances to pin No. (2,) and B to No. (3,) and C to (*b*,) in diagram; and another similar triangle is measured and marked—and so on, the whole extent of the base line.

The row of wooden pins, set by C, becomes a base line for a subsequent series of triangles further east. The party continues, in the same manner, to run back and forth, to measure and mark, all the land on the east of the base line. They then return to the place of beginning, at (1,) and (2,) in the base line. A and B take position as before; and C on the west side of the base line. They then proceed to measure and mark the ground on the west in the same manner.

Thus, in about four hours, three persons, with the assistance of a small boy to carry and deliver wooden pins, the ground to plant 555 trees was measured and staked, ready to dig the holes; and the work was so accurately done that the eye could not detect the least variation in any of the rows in any direction.

DIGGING HOLES AND PLANTING.

The party, A, B and C, each takes a row, an iron pin and a spade. They withdraw the wooden pin, and in the place insert the iron pin deeply in the ground. The hole is then dug of the proper size and depth, the iron pin remaining in position. Then withdraw the iron pin and return the wooden pin to the place at the bottom of the hole, to mark the exact position of the tree. All the holes being dug and marked, as above, and the trees distributed to their places, commence planting. Withdraw the wooden pin from the bottom of the hole, and insert in the place an iron pin. Prepare the bottom of the hole to receive the tree; set it close to the iron pin, extending the roots around or beyond the pin, if they fork; fill up, tramp and dress off; then withdraw the iron pin and the work is done, and the tree is in its exact position. In this manner the whole orchard was planted with great facility and accuracy.

OBSERVATIONS.

1. The utmost care should be used to keep the wire measure free from kinks, bends or obstructions, and uniformily stretched and taut. Brass or copper wire is better than iron—though I used iron wire for my own measure.

2. The wire measure should be kept horizontal when used, and the iron pins perpendicular, and inserted close to the wooden pins, uniformly on the same side of the base line.

3. If the ground be hilly or uneven, the measure, at the apex, should be elevated until it is horizontal; and the place marked with a perpendicular rod of sufficient length. And if the ground slopes, in the opposite direction, A and B should elevate their end of the measure in the same manner.

4. Whenever you have two wooden pins in proper position, you can project another triangle adjoining by using the line between the pins, as a base; in this way nooks and corners may be filled in conformity with the other parts of the land.

5. If you wish to set your trees 15, 20, 30 feet, or any other distance apart in *hexagon*, the wire measure must be constructed accordingly, each branch must be exactly the same length, the rings included.

6. If the land be of uniform shape, having one or more straight sides, the base line may be projected on any one of the straight sides, and the whole plot measured and marked therefrom. In all cases the base line must be perfectly straight, and carefully and accurately measured and subdivided to ensure accuracy in the work.

7. In the foregoing, I may have been somewhat prolix, but desired to describe the matter so clearly and accurately that any and all persons might comprehend it with ease. JAMES A. MAXWELL.

Monte Juan, near Grand Gulf, Miss., May 20th, 1870.

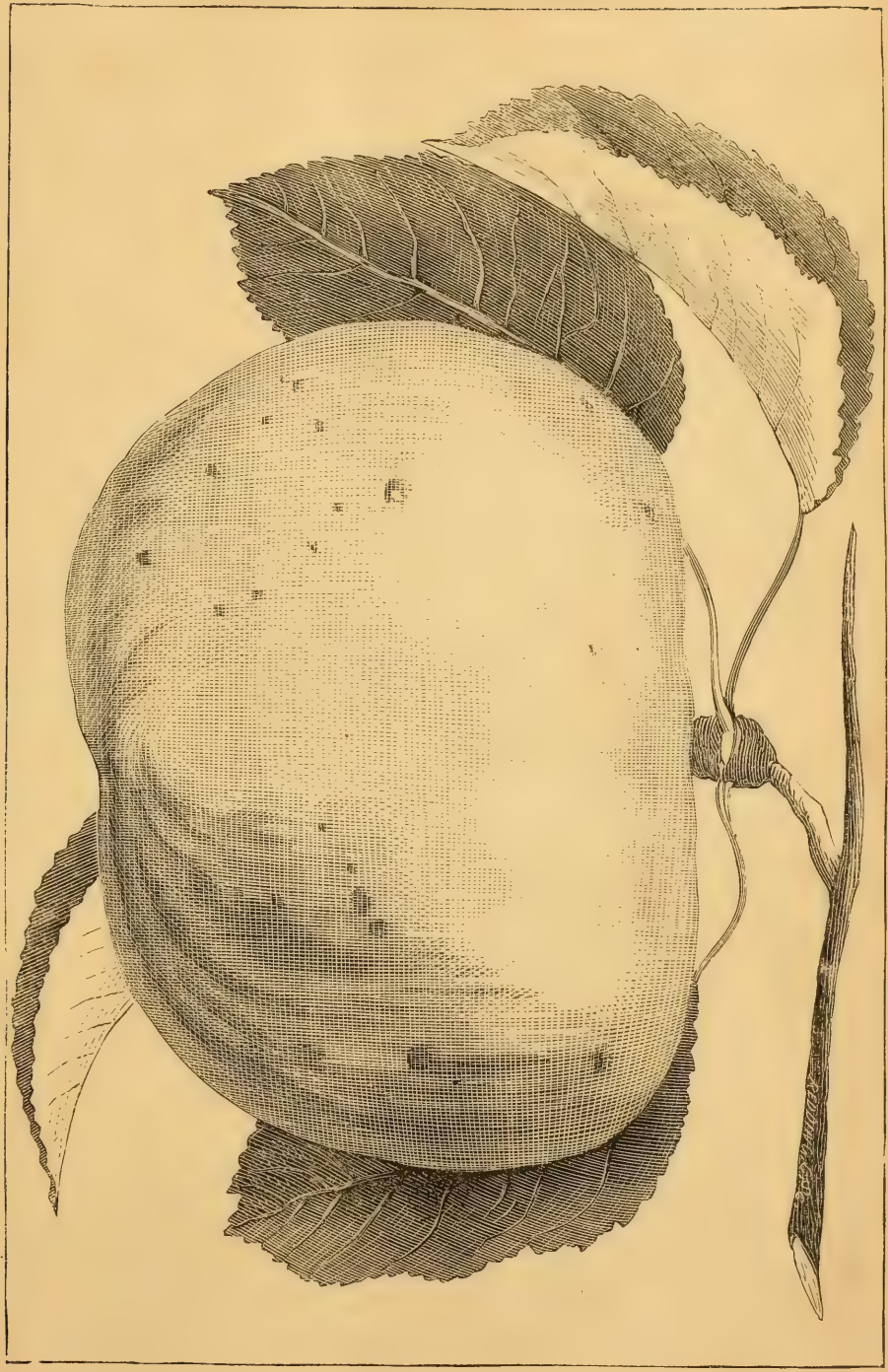
The Batchelor Apple.

This magnificent apple originated in North Carolina, and is known by several other names—Byers, Buckingham, and King, for instance.

Fruit, of the largest size: roundish, broader at the base, a little flattened; skin, lemon yellow, washed with lively red on the sunny side, sometimes obscurely striped with the same, and sparsely sprinkled with grayish specks; calyx, small, open in a rather deep basin; stalk, usually very short, thick, and inserted in a moderate regular cavity, which is often russeted; flesh, white, tender, fine grained, juicy, and of a most agreeable sub-acid flavor. Ripens in October and November.

Keeping Irish Potatoes.

Dig mornings and evenings or on cloudy days, so as to avoid the injurious influence effected by the sun in this climate; spread on the dry ground under the north side of a house where they may be cool, have a free circulation of air and be protected from moisture. Here they will remain sound. Or they may be kept on a floor of slats in a barn or other convenient house, having abundant openings for currents of air, and not too near the south side of the roof where they would become too warm. In any case they must not be in heaps, but a single layer. I keep them in this way the whole summer and fall, even on a close floor, but with good ventilation, and they never rot. Some varieties, however, are liable to rot in this climate, however treated. All are apt to sprout in the fall; all sprouts should be rubbed off as soon as they appear, or the potato will shrivel and become inferior. As the season advances and grows cold, I put in barrels in a close room and cover with old carpets or bags or anything convenient, or bulk them and cover with dry cotton seed. I have kept them also packed in barrels of dry sand perfectly sound—but they will sprout, produce small potatoes and force the tops out above the sand.



Batchelor Apple.

For years I found the Pink-eye succeeded best here, and kept well; and it does yet. But for several years I have planted the early Goodrich. It is the earliest I have ever tried, is of better quality than the Pink-eye, very prolific, may be dug and exposed as much as you choose, to the sun, and never rots with me. The Harrison rots considerably. The early Rose is a total failure here. It produces an enormous quantity of vines, is very late maturing, rots considerably, and the tubers seldom become as large as a hen egg—mostly between buckshot and partridge eggs in size. Nothing like what it is North. In other localities it may succeed well. I shall plant no more of them, and I think this shall be my last crop of the Harrison.

The early Goodrich is very prolific—I have repeatedly counted forty potatoes to one vine. They seem to grow larger here than they do North. In some Southern localities they may not succeed so well as on my tough clay soil. Here, on properly prepared ground, they are ready for the table in six weeks from the day they were planted. They can be thoroughly cooked in less time than any other variety I have tried.

I raise two crops a year of them. Plant the first in February, March or April, and harvest in June. Let them air and dry well till middle of August or first of September, and then plant second crop. Unless dried for some weeks they do not come up well; but all that get up by middle of September bring me heavy crops.

D. L. PHARES, M. D.

Newtonia, Miss.

Evergreen Shrubs for Lawns--The Junipers.

The common juniper—*communis* var. *Canadensis*—is well known, but too rarely planted because it is common. Singly, upon a lawn, it grows rapidly; and, although rising but a few feet high, it spreads over a broad surface and forms a remarkable and effective object. *Juniperus squamata* is also a variety effective as a large spreading plant upon an extensive lawn. *Juniperus nana* and *echiniformis* are of a lighter, more yellow green and compact habit, and for positions where only a limited space can be given them, are very beautiful. They are nearer allied to the *juniperus sabina*, or common savin, a variety

well known, and that forms one of the best masses of low growth among the whole collection.

The *juniperus prostrata* is a very low creeping variety, of value in rock-work, and for massing and forming a low evergreen bed upon a lawn. It is admirable also for planting on small mounds and in cemeteries over the graves of the departed. F. R. ELLIOTT.

The Scuppernong in North Carolina.

In a report on Grape Growing, made by Mr. J. S. Cannon, at the first Annual Fair of the Cape Fear Agricultural Association, held in Wilmington, last fall, are some interesting statements in regard to the Scuppernong Grape and Scuppernong Wine. We make a few brief extracts from the paper:

WINE *vs.* COTTON.

In this section of country a man and horse can cultivate as many acres in grapes as they can in cotton, and can make annually as many gallons of wine as they can gallons of corn, and at the same cost of production. The wine can be sold at the same price per gallon, if purchasers will take it at the press and furnish casks to put it in. And the maker can furnish casks and cellars, sustain the loss by evaporation for two years, at the end of which time he can sell his wine for fifty cents per gallon, and make as much profit as is usually made on the ordinary products of the country.

EXTENT OF THE BUSINESS.

This year, thirty thousand bushels of Scuppernong Grapes have been raised in North Carolina, from which ninety thousand gallons of wine could have been made. These grapes have occupied not more than one thousand and fifty acres of land, averaging a product of two hundred bushels to the acre. Their cultivation has not been more expensive than the cultivation of the same land in corn would have been, but gathering the grapes and making the wine has cost ten cents a bushel extra.

Grapes can be raised cheap enough in North Carolina—all experience is entirely satisfactory on this subject. No man wishes to raise them any cheaper. Where failures have been made, they are attributable to other causes, which are mainly these: first, adding sugar to the juice of the grape; second, asking too high a price for the wine.

SUGAR AND RUM.

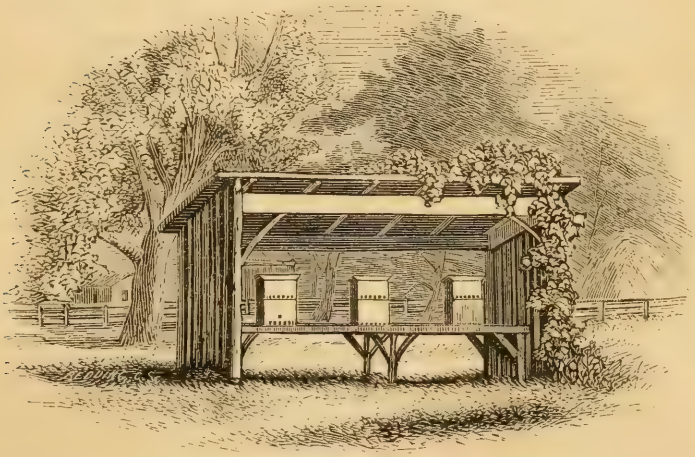
It is a general custom among us to put two or three pounds of sugar to the gallon of grape juice. This is the great pest and nuisance to our trade. It is all wrong, from beginning to ending. It adds three-fold to the cost of the wine, and makes it a headachy, syrupy, unhealthly drench. Sugar don't make *wine*, it makes rum, common rum, the most unpalatable and headachy of all drinks. Those of us who have drank the rum made from sorghum, have not forgotten these qualities. If that was an "Evil Spirit," "who came by night and sowed tares in the wheat," what must be he who comes in broad daylight and turns our good, wholesome wine into rum, the syrup of rum.

UNREASONABLE PRICES.

We have all made the mistake of asking too much money for our wine. There is no hotel in North Carolina where a bottle of Scuppernong can be

bought for less than two dollars, and no saloon where a glass can be had for less than twenty-five cents, and the usual price asked by our wine makers is from two to three dollars per gallon. Everybody knows that we can make this wine for fifty cents a gallon, and everybody knows that one dollar per gallon yields us unreasonable profits, therefore they will not buy our wines at our prices, and they remain on hand; they are sold by driblets, they are given away, they are drank by visitors, until all the wine disappears, and no money is ever received.

A Rustic Bee-House.



We here present a design for a rustic apiary or bee-house, which strikes us as being far more beautiful and appropriate than the elaborately ornamented temple or palace-like structures we sometimes see. The mode of construction is readily seen. It may, of course, be made of any desirable size on the same plan.

Fruits and Vegetables in China.

Mr. I. J. Allen, recent United States Consul in China, formerly Secretary of the Cincinnati Horticultural Society, attended a meeting of that Society lately, and made the following interesting statements:

The part where he resided was in Tropical China, being about the latitude of Havana. In regard to fruits, he spoke of the nectarine and plum as being very fine. Also, the "Lychee," about the size of our black walnut, and with a dark purple pulp, was a very delicious fruit. He also alluded to the "whampete," somewhat resembling our haw, but of the size of a grape. This fruit was just acid enough to keep one hungry for it all the time. One could scarcely tire of it. He feasted and fatted on it. In regard to esculent roots, the "lotus" root needed particular mention. It has a long root, or rather a succession of roots, of the size of a sweet potato, the whole root

alternately swelling and contracting. This was wonderfully prolific, but the root was coarse. It was, however, quite nutritious. The Irish potato was not grown in China, but was coming into use, being imported from California. The China peaches were soft, and very delicious and common. Watermelons were abundant and excellent, but the Chinese seem to prize the seeds more highly than the flesh. When dried the seeds were sold, to be eaten like nuts. They were also prized for their medicinal qualities.

Facts About Figs.

Professor John Darby, in the *American Grocer*, adds the following to the literature of the fig—the most delicious of our Southern fruits:

The fig is a very singular fruit. Mirbel called it a *syconus*, which means in Greek a fig garden. In its earliest stages it is not very unlike some other fruits, but in its development it undergoes a strange modification. In its incipient state it is an aggregation of numberless flower buds, which in ordinary course would be developed on a long branch; but the branch in the case of the fig, instead of developing into a woody limb bearing flowers, grows up around the multitude of flowers enclosing them in a conical receptacle, and forming a succulent fruit, as we call it, inside of a woody branch. The luscious fig that we eat is not a fruit at all, strictly speaking, but a succulent branch. Every seed in the fig was a separate, regular flower, and the seeds are strictly the fruit.

The fig tree bears two or three crops in a season. In our Southern States there are generally two crops—one in May and one in July and August. The May crop is usually small, and sometimes fails altogether. The figs are cultivated in Turkey, Greece, Southern France, Spain, Italy and Northern Africa. It has been cultivated from the most ancient times in the East, and its fruit has been highly esteemed and made an ordinary article of food in South-western Africa. The cultivation was transmitted from the East to the Greeks and Romans, and through them to all countries where the climate was favorable for its growth.

The figs, when ripe, are dried in ovens, and then closely packed in chests, baskets or boxes for exportation. Our best figs come from Turkey. Those coming from Kalamata, in Greece, are said to be the most luscious. Italy and Spain export a large quantity. In our Southern States the figs are put up simply as preserves for family use. They might be made an article of commerce if attention was directed to their preservation. They yield abundantly and require little care. The fig contains a large amount of sugar, and might be manufactured into wine, alcohol and vinegar. It is a latent blessing, which time will call forth into practical application. The fig is a most healthful fruit when used in its perfectly ripe state. Nothing is more luscious than the fully ripe fig taken and eaten directly from the tree.

Hints About Flowers.—House plants ought to be stimulated gently once or twice a week. Rain water, so refreshing to summer flowers, always contains ammonia, which also abounds in all liquid manures. If you take an ounce of pulverized carbonate of ammonia, dissolved in one gallon of water, it will make spring water even more stimulating to your plants than rain

Cotton Insects.

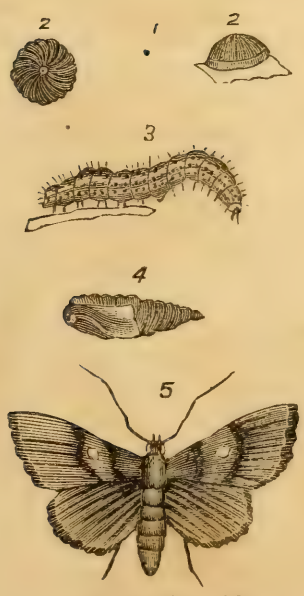
water. If you water your plants once in two weeks with guano water (one tablespoonful to a pail of water) they will grow more thrifty. Chicken manure dissolved in water is excellent.

Always keep the soil in your flower-pots loose. A common hair pin used daily will stir the earth sufficiently.

WHITE BANANAS.—The Boston *Shipping List* speaks of a cargo of *white* bananas lately imported from Jamaica as of larger size and more delicious quality than any that have ever been eaten in that latitude before. Both dealers and the public have been used to prefer the red banana, but the white is really far superior to the other. It is said that the natives of the island eat none but the white fruit and give the red to their pigs.

Stock and Natural History Department.

The Cotton Caterpillar, (Anomis Xylina.)*



The Cotton Caterpillar.

1. The Egg, natural size; 2, 2. The Egg magnified eighty diameters, (top and side views;) 3. The Caterpillar; 4. The Cocoon; 5. The Moth.

EVERY HUMAN BEING INTERESTED.

The subject of entomology is one in which every human being is deeply interested, in whatever part of the world he may be; on land or water; deep down in the bowels of the earth or high up in mid air; whether civilized or savage, king or beggar. The great chalk hills of England, many large islands of the oceans, extensive strata of the solid continents, are the work of minute creatures. All the food we eat, all the liquids we imbibe, all the air we inhale, are liable to be infested by INSECTS. Even the carpets on which we tread, the clothes we wear, the beds on which we seek repose, the books we read, the title deeds to our lands; nay, our very persons, within and without, are mercilessly assailed by them. The deeper parts of the eye, the brain, the cavities of the body, the muscles, the blood itself, are not exempt from their invasions. Yet how little do we know of them! Rather, may I not ask, how few know really anything about them—their

*Abstract of a lecture delivered at Woodville, Mississippi, May 4, 1869, by request of the Farmers' Club, by D. L. Phares, M.D., A.M.

characteristics, habits, modes of propagation, deleterious or beneficial influences? How many, unable to distinguish between friend and foe, would destroy indiscriminately all insects, because, forsooth, we happen to call them BUGS. Why is this? Surely, not because the subject is inscrutable or of secondary importance.

FINANCIAL VIEW.

Look at an item or two from a financial stand-point. In 1860 some asparagus plants were imported from Europe, and with them was introduced an insect never before known in America. It was remarkably thrifty in its new home, and propagated so rapidly that in a single season, in a single county on Long Island, it injured the asparagus alone to the extent of $50,000. Another bug injures the potato crop very often to the extent of many millions of dollars annually; sometimes destroying the crop entirely in many places. In Texas and other States and Territories west of the Mississippi, the locust or grasshopper destroys its millions annually. Nor are we of Mississippi more fortunate; for in 1868 our food crop was damaged by insects full one million dollars, and our cotton crop by one insect nearly a million; by others as much more, and by the caterpillar ten millions; the portion of this county being about $300,000—a sum compared with which Federal, State, county and municipal taxes combined are a trifle, heavy as we may regard the burden; for we have never paid an annual tribute approaching twenty dollars for every man, woman and child in the county or State, save to the destroying insect. I might occupy your attention for an infinite time with additional illustrative facts, but enough has been said to show conclusively the paramount importance of the subject.

RESISTANCE PROPOSED.

A wise and good government being distinguished by the lightness of taxation, shall we, sovereigns as we profess to be, manifest our wisdom by earnest endeavors to devise ways and means of reducing the enormous tribute we pay annually to the puny insect for which we affect so much contempt? We can successfully rebel against this levy; and as wise men it becomes us to do so, and throw off the galling yoke. Our ancestors of the thirteen colonies could not, in their declaration of independence, bring forward as a ground for rebellion so grave a bill of complaints and grievances against George III as we are forced to do against the 40,000 known species of insects in the United States, that corrupt our food, pollute and poison air and water, shock all our senses, excoriate our skins, deplete our blood vessels, torture our nerves, disorganize our blood, sap the citadel of life, batten on our dead bodies, and worse than all, some may think, dissipate the fountains that should consummate our hopes and plethorize our purses.

COTTON CATERPILLAR.

But "*Entomology*" embraces too wide a field for one or one dozen lectures. The "*Insects Injurious to the Cotton Crop*" is also a theme too comprehensive for this occasion. I will, therefore, confining my remarks to one species belonging

to this last category, invite your attention to a few words about the *Noctua Xylina*, *Anomis Xylina*, Chenille, or Cotton Caterpillar—often called the "army worm," very improperly, since it possesses none of the characteristics implied by that name.

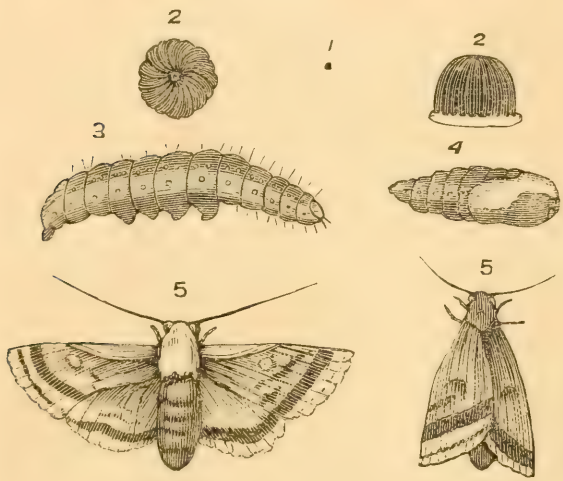
It belongs to the family *Noctuidæ*, *Noctuaelitæ*, or owlet moths, which, as the name indicates, fly mostly at night. This family, which contains 2,500 known species, makes up, with several other families, the extensive sub-order Lepidoptera, nearly all of which are the farmers' enemies.

HISTORY.

The first recorded appearance of the *Anomis* on the western hemisphere, if I remember rightly, was in 1788, when, at a moderate estimate, it destroyed, in the Bahamas, 200 tons of cotton—equal to anything we have seen in our day, having regard to the limited culture of cotton in those Islands. In Georgia, in 1793, it almost entirely destroyed the cotton, so that Major Butler, from 400 acres, gathered only eighteen bags. In South Carolina it appeared in 1800. In 1804 it made one of its widest and most devastating invasions. It was, I believe, on this occasion that Father St. Pierre was most earnestly and piteously entreated, by his simple-minded parishioners of Louisiana, to furnish holy water with which to repel "*les chenilles.*" In districts further north, where they came later, they were finally exterminated by a snow storm. From 1804 to 1825 they appeared many times, doing little damage generally; but in 1814, perhaps it was, they came in June, when in portions of Louisiana, the plant being very backward in consequence of a very cold, late spring, they ate it down to the ground, so that not a lock of lint was matured nor a seed saved. In 1825 the destruction was general in extent, embracing all the Cotton States; the late Mr. Affleck, in one of his papers, asserting that the destruction was "universal and complete." I must be permitted to say that it was not "complete," as I most distinctly remember and know. I saw fields in which many bolls were fully matured and gathered before the chenilles injured the plant, and considerable quantities of very superior cotton were made. This was the first year I saw the chenilles, and circumstances so impressed me, that my recollections of their appearance are more vivid than of any time since. The insect was again destroyed by a storm, as we have seen happen less extensively several times since; the wind and rain beating them down, and the water sweeping them along, and forming immense heaps in some places.

In 1826 they appeared at New Orleans, August 1st, and by the 23d extended along the entire coast to North Carolina. At this date a cloudless sky favoring the piercing rays of the sun, and dry, parching air, they died suddenly in the fields or in their attempts to retreat, having done little damage to the cotton. They came in some districts in 1827, 1829, 1833, 1834, 1836, and in 1838, early in July, in Florida, and by the 20th September had completely stripped the cotton. They spread over a very large portion of the Cotton States that year, doing much damage in September and October,

during which time I first carefully studied them. They came again in 1839; and in 1840 they appeared in Florida, July 15th, and had stripped the cotton September 6th, giving fifty-two days from their first appearance till their work was completed. In 1841 and 1842 the damage was light. In 1843 they were first seen August 1st, and had stripped the cotton September 15th, a period of forty-six days. In 1844 the first were found webbing up July 13th, and had stripped the cotton September 15th. In 1845 the damage was great. They even destroyed cotton planted as an experiment at Way Key, eighty miles from any point where cotton had ever been grown before.



The Boll Worm.

1. The Egg, natural size; 2, 2. The Egg, magnified eighty diameters, top and side views; 3. The Worm; 4. The Cocoon; 5, 5. The Moth.

Gentlemen now present no doubt remember 1846 as the great caterpillar year, rivalling 1804 and 1825 for widely-extended destruction of the cotton. The first brood was found webbed up July 7th, and by the 20th, a period of only thirteen days, many fields were stripped of leaves, young bolls and even the bark from the older bolls and the plant itself. On the 26th the second brood webbed up, being a period of only *nineteen days* between the two broods—the shortest on record, I believe. In some districts where they appeared later, the destruction was not completed till September 5th. This year, for the first time, the insect was observed in all stages of development at the same time—egg, caterpillar, chrysalis and moth. This confusion of generations has been observed since, and especially in 1867, when the drawings, of which I will show you copies, were executed. There were seen on a single plant simultaneously, recently laid eggs, others just hatching, caterpillars from almost microscopic mites to nearly two inches in length, pupa and imago.

In 1847, 1848, 1849, 1851, 1852 and 1855 they did little damage except in limited districts, and the last named year were again destroyed by drouth and heat, as we have seen occur several times. As I have had no leisure to consult dates, reports, authorities and statistics, and kept no records, I cannot speak of the doings of the chenilles from 1855 to 1863 with any certainty. But from 1863 to 1868 inclusive, they came annually and did much damage in many districts. Last year they destroyed the cotton so early in some districts, even some degrees north of us, as well as south, that not enough of

seed could be saved to plant the next crop. Yet on a farm in East Feliciana, a few miles from my residence, they came in May, and continued throughout the season without materially damaging the crop. Other farms early invaded were little damaged.

WILL THE CATERPILLAR CAUSE COTTON CULTURE TO CEASE?

Such is a brief sketch of the history of the chenilles in the United States. They invade the cotton fields also in Guiana, and other parts of South America. In the West Indies they so constantly destroyed the cotton as to force planters many years ago to abandon its culture. Some years ago, a prominent writer stated in one of the agricultural journals, that he had read somewhere that the caterpillar had, in ancient times, broken up cotton growing in Egypt. It is proper to state, however, that he could not adduce any authority for his assertion, and that a careful examination of all the ancient writers extant, to which I have had access, convinced me that he was mistaken. Besides the discussions, sometimes extremely earnest, carried on for two hundred years preceding 1847, by the ablest and most learned men in the world, (as to the identity of the fine linen or *byssus* of the Bible, with the *carpasus* or *carbasum* of the ancients, and the *gossypium* or cotton of the moderns, and as to the growth of cotton in Egypt, and the textile used in bandaging mummies,) have brought out every line in every ancient writer extant relating to the subjects in hand; from which it appears that cotton was not grown in Egypt in very ancient times at all. As you are aware, it is now grown there—the Viceroy himself being the most extensive cotton planter in the world, and cultivating over five hundred thousand acres with steam plows and other improved implements. Well posted in modern improvements, and (we may suppose) as to the characteristics of the chenilles; and as it rarely rains there, and he controls irrigation, he has the caterpillar completely in his power. This cannot be said of any other region except in part of the Mission Valley in Texas, and some other small tracts, where, with a little care, this pest cannot live.

It therefore becomes a question of very serious import, whether the chenilles will compel farmers of the United States to abandon cotton culture. I think this will occur, at least, in many districts, unless, guided by intelligence, the farmers unite their efforts to repel the destroyer. Many years ago, the annual destruction by this pest of cotton, in a portion of Louisiana which I repeatedly visited, forced planters to abandon its culture. The plant being destroyed in June and July did not mature seed enough to plant another crop. In portions of other States, the results of cotton culture have sometimes been equally disastrous. This, however, is not likely to become general in all the States every year.

WHY IS THE CATERPILLAR WORSE SOME YEARS?

I am often asked, "Do you think cotton-worms will come this year?" Now, I do not believe they have ever been entirely absent from the United States since 1793. I suppose they have been in America as long as cotton has

been grown, and will continue here probably as long as we raise annual crops of that staple. Some have supposed the caterpillars more destructive every third year; others look for them every twenty first year, because very widely destructive in 1804, 1825, and 1846. Hence many expected a total loss of the crop of 1867. But that year the destruction was little greater than any one of the three immediately preceding years, and certainly much less than in 1868. There is no definite period of greater or less invasion. Yet there may be an approximation. In a lunar cycle of nineteen years we have a series of eclipses very nearly repeating those of the preceding cycle, and to be reproduced in the succeeding one. There are cycles in which the magnetic needle oscillates through a limited arc of a circle. So there are other cycles of other phenomena; among them, cycles of meteoric phenomena, or of seasons, as they are called, in which an average year of one cycle corresponds with some year of another. That is, the amount and character of rain, hail, snow, fog, clouds, heat and cold are repeated and similarly distributed through the year. Certain meteoric phenomena increase from year to year till they culminate; then gradually retrograde, to be repeated in a succeeding cycle. It is upon these meteoric states that the greater or less abundant propagation of the chenilles depends. Like other insects, they are extremely sensitive to atmospheric changes—more so than many of the delicate tests contrived by human skill and ingenuity. Hence, during some years, the chenilles appears to be swept entirely away; again, meteoric conditions favoring, more and more in certain localities, the insect increases correspondingly, till finally one or more years culminate in wide-spread destruction of the cotton. Persons who have observed closely for years, may, in June, without knowing whether there are any cotton moths in any stage in the entire country, predict with almost perfect certainty from meteoric conditions whether or how much the crop will be damaged by them during the succeeding months.

A combination of meteoric conditions favoring the development of one species of insect not unfrequently proves destructive to others. For instance, in some of the Western States, in 1867, the conditions were so favorable to the growth of the Colorado potato bug, that many crops were totally destroyed to the extent of some millions of dollars. The season continued open and warm so late that the brood, which otherwise should have remained till next spring, hatched out in the early fall and perished for want of food. Here the season favored so much and so long as finally to prove almost wholly extermination in the end, by increasing the insect so much it produced a famine by its numbers. Few survived to propagate the species the next season, which proving more favorable to their enemies, the latter increased rapidly, and consequently crops were not damaged at all last year, in localities where farmers feared they would make nothing. Similar accidents sometimes befall the chenille, and similar illustrations might be multiplied indefinitely.

ERRORS.

Many years ago, the late Dr. Gorham, of Louisiana, published his observations of the chenilles made during the then current year. Having collected

a number of chrysalides, he took them home and watched them closely to see the cotton moth come forth from the pupa case. But to his astonishment, instead of the anomis, a swarm of ichneumon flies came out—not one cotton moth in the entire lot. In his new-born joy, and earnest desire to cheer the desponding cotton planter, he speedily proclaimed through the press the results of what he deemed a great discovery—that henceforth the cotton crop was safe, the cotton caterpillars were done for, they could never seriously injure another crop, the ichneumon fly had destroyed them.

Many other mistakes even greater, are made every year about this same insect, and the most astoundingly absurd stories published every week with silly plans for its destruction. As a sample, take the following, which, in varied forms, has had a wonderful run for months past in many periodicals; in some of which, at least, as professed leaders in the farming interests of the South, we have a right to expect and require a higher order of intelligence. We read as follows:

"IMPORTANT TO PLANTERS.—The following, which we clip from the Selma (Ala.) *Times and Messenger*, will be of interest to our planting friends. Similar investigations in other sections, attacked the past season by worms, have elicited like results. It would seem that the necessity for destroying all the old cotton stalks by burning, is too apparent to require further advice. In all fields and in all those sections of the country where the crop was infested by the worm, it becomes the duty of the planter to burn all the old stalks. This seems to be the only feasible method of getting rid of this terrible scourge of the cotton planter.

"A few weeks ago, we published a statement from a Texas paper that the egg was deposited in the stalk of the plant, where it remained until the proper season, protected against its enemies, then to appear upon its mission of destruction, and to gather up closely and burn the dry stalks in fall and winter would necessarily destroy them.

"Yesterday we saw, in the counting-room of Messrs. Hardee & Robinson, proof of the correctness of this theory. There were the dry stalks. On the surface was the scar left when the eggs were deposited. Inside, in the pith of the stalks, were the eggs in some places, and in others worms already emerged from the egg, and feeding upon the soft part of the stalk surrounding them.

"We presume any planter can have abundant proof of the theory in question. He has only to look for it in the stalks in his cotton field.

"This matter appears to us to be worthy of attention. If the egg is deposited in the stalk and thus preserved and warmed into life and sustained through the winter, fire is the remedy beyond question."

Here, it is true, are some facts which cannot be denied, and which may be verified by any planter, any and every year. But unfortunately, the writer, utterly ignorant of the import of his facts, strikes out at a venture, in total darkness, and very naturally widely misses their true interpretation. His conclusions are as far from the truth and as complete a *non sequitur* (as the logician would say) as to argue that because ten and twenty make thirty, therefore ten times thirty *doves* make forty *geese*. Burn every dead cotton stalk in the universe, at any period you choose, and yet the next season there

will be not one cotton moth or caterpillar the less for all the burning. For the anomis never deposits an egg in any such locality as that indicated. It is evident that the writer and others concerned in getting up this stupid story, have never seen either the egg or young caterpillar of the cotton moth. Nor is this perhaps very strange; for we not unfrequently see intelligent farmers, who, though born and bred on the farm, successful cotton growers, and having seen many crops destroyed by the chenille during a life of fifty or sixty years, yet never had seen the egg of the anomis.

Many have all their lives mistaken one or more species of aphis in some of their stages of growth for eggs of the anomis. Here, as we often see, one error leads to another, or a series of others.

Last year, on a farm in Louisiana, as already mentioned, the caterpillar commenced its work as early as May, and continued till frost terminated its labor; yet one generation succeeded another so slowly and in such small numbers that the cotton was scarcely injured; while on other places where the destroyer appeared later, the cotton plant was so early and completely destroyed as not to mature sufficient seed to plant another crop. Why this difference? The owner of the farm mentioned, as well as others, alleged that the ants being very numerous carried off and destroyed the eggs and young caterpillars. The ants it is true swarmed in unwonted numbers in the cotton fields, as they did also in corn fields, potato patches, gardens, orchards and forests. But on other places where there were plenty of ants constantly infesting the plant, the caterpillar wholly destroyed the cotton. Again: in some fields the cotton was completely stripped, as we often see, up to a definite line on one side, while not a leaf was touched on the other side of this line. This occurs even where the same rows cross this line, one portion of the row being stripped and the other unharmed, although there was plenty of ants on both sides of this mysterious line, established by the caterpillars themselves. And again: on inquiry, I have never found any one who has seen the ants eating or carrying off either the eggs or young caterpillars. Here, then, it appears, is a total want of facts, and the ant theory is so far without a shadow of foundation on observed facts. Besides the eating of one portion of a crop and leaving another part, or the destruction of the entire crop on one farm and escape of another unharmed, may be satisfactorily explained on mechanical and chemical principles. This, however, with the work of the ants and other topics touched on must wait another time for fuller discussion.

Returning to the eggs in the cotton stocks and branches, for a moment, I may briefly remark that a hog is just as capable of quarrying a block of marble, and fashioning it into an equestrian statue of Napoleon, as is the anomis of depositing its eggs in any such situation as indicated, as any one knows, who has ever examined one of these insects. Burning the stocks would, indeed, destroy many eggs of the katydid and grasshopper, deposited in the cotton limbs every year. This extract contains several other absurdities and impossibilities, which I will not stop to notice. Many other errors I pass by.

PROPOSED MODES OF DESTROYING.

1. The "grass worm" envelops itself in a cocoon, at or just under the surface of the ground, formed of silk, particles of dirt, gravel, etc., which many mistaking for the cocoon of the anomis propose to destroy by autumnal plowing. Although the proposed plowing in the fall, if properly done, would on many of our farms be very beneficial, it would not, of course, have the effect to diminish the number of the anomis, as it does not hybernate in the ground.

2. Hot, dry weather, as already stated, destroys this pest quicker than anything else.

3. Severe cold suddenly terminating several days of warm, open weather, in winter or early spring, kills many that had come from their hiding places to seek food or mates. On these occasions some are caught by the birds also.

4. It has been proposed to suspend white sheets or flags above the cotton growing in the fields—one flag to every two or four acres—for the moth to deposit its eggs on. This proposal is, of course, the result of the grossest ignorance.

5. Many have attempted to kill the caterpillars by hand; in some instances, apparently, with perceptible good results. But this cannot succeed fully where large crops of cotton are planted. But by diversifying our crops and high culture, we might plant but two or three acres of cotton to the hand, and thus make as much or more than we now do by planting ten or twenty acres to the hand, while we should have time and ability to destroy the caterpillar.

6. Carbolic acid, so fatal to all the lower orders of organisms, both animal and vegetable, has been recommended and tried pretty fully, but for obvious reasons failed in the main, except when used of such strength as to kill the cotton plant itself.

7. It has been stated that the sea-island cotton has escaped when other cottons were destroyed; it is, therefore, proposed to plant only sea-island cotton, and thus head off the anomis. But this is a rare occurrence, and happens, indeed, no oftener than we see other varieties of cotton escape on one farm, or part of a farm, while the balance was stripped. Besides, the sea-island cotton has been stripped in some localities annually—stripped when grown on islands, whether surrounded by fresh or salt water—and, in one instance already mentioned, at Way Key, eighty miles distant from any place where cotton had ever been raised, it was destroyed the first year it was planted. I know of no variety of cotton, except, perhaps, the Garboreum or tree cotton, that is exempt from the ravages of the anomis.

8. Poisoning. This is successfully practiced with many moths, especially that of the tobacco worm, by mingling the poison with thin syrup and dropping it into the flowers in which the moth seeks the nectar as food. The poison is deposited in the stramonium blossoms for killing this last named moth, but it would not do for the cotton moth. For this, other flowers would be preferable, or the poisoned syrup might be placed in saucers or plates set on stakes, at suitable distances in the cotton fields. Strychnine,

perhaps, would not kill them; but we might use infusion of quassia, pyrethrum rosea, coculus indica, corrosive sublimate, the preparations of arsenic, cyanide of potassium, etc.

9. Molasses, water and vinegar, or rum, beer, or other liquor substituted for the vinegar, put in bottles—wide-mouthed being best—distributed over the fields, have been often used very successfully. Mr. Downing mentions an acquaintance, who using molasses and water only one season, caught and exterminated three bushels of insects in this manner, thus saving his garden; and Mr. Robinson, of New Haven, caught over a peck in a single night.

10. Many insects are destroyed by lighting fires of dry wood, placed on a layer of earth resting on platforms, surmounting stakes planted at suitable intervals on the grounds to be protected, the fires to be lighted at dusk.

11. A lamp trap has been proposed, each side being formed of two panes of glass, inclined towards the lamp chimney in the centre, at a large angle to each other, with a space between the pieces of glass of half inch for the moths to enter, which, following the inclination of the glass, they could not fail to do. Once inside, they could not escape, but finally fall into a suitable vessel of tar, or other adhesive or oily substance placed beneath to receive them.

It should be observed that when poisons, syrups, etc., are used, they should not be placed before sunset, nor allowed to remain after daylight, lest bees, ichneumon flies and other useful diurnal insects be destroyed. It is necessary, too, to remove daily the hosts of dead insects from our receptacles and replenish the latter as often as necessary.

I would remark, also, in passing, that one of our own members has been very successful, by one of these methods, in destroying the moth of the boll-worm when containing hundreds of eggs; thus for each moth captured saving hundreds of bolls, with their wealth of lint. Several of these methods systematically pursued by the united action of the farmers would be crowned with perfect success.

12. Omitting to plant cotton one year in the whole cotton region of the United States, and not suffering a single cotton plant to grow, would remove the pest, perhaps for years.

13. Planting different parts of the cotton lands on alternate years would have a like effect, though not so completely. For illustration, say plant no cotton anywhere east of the Mississippi River in 1869, and none west of it in 1870, and so on alternately.

14. The anomis may be successfully defeated by planting a variety of cotton that matures in the shortest time, planting it say last of May or first of June, after the first brood shall have perished for want of suitable food, the precocious cotton still having time to mature. All these methods are but briefly touched, as I have not time to elucidate and develop them fully.

15. A member has suggested the introduction and propagation of the European sparrow, so successfully and profitably introduced recently into some of the cities of our Eastern States. The following statements will show the pro-

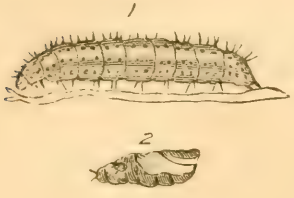
bable result of introducing the European sparrow: More than a hundred years ago the people of Northern Italy, finding that the sparrows destroyed great quantities of rice and other small grains constituting the main crop of that country, became exasperated, and combined to destroy these birds. In a few years the sparrows were well nigh extinct in all Italy, and as a consequence the noxious insects multiplied so abundantly as to destroy many fold more than the sparrows had done. In their distress, the farmers very wisely consulted a distinguished naturalist and followed his instructions. They procured all the sparrows they could from other countries, and protected them till sufficiently numerous to destroy the noxious insects. Then, as these birds rear several broods of young every year, the farmers, to prevent them becoming so numerous as to destroy their grain, killed all the early breeds just before ready to leave the nest, at which period they are excellent for the table. The last brood of each season was saved, being too late to destroy the grain.

PROPAGATION.

As I have before indicated, very hot, dry air arrests the development of this insect. The eggs do not hatch, the minute young caterpillar cannot extract juice or delve into the under surface of the drying, hardened leaf, and himself perishes and dries up; while the older ones, finding the toughened tissues of the plant too much mechanically and chemically for their delicate mechanism of mastication and digestion, withdraw in disgust. Many, as seen in the Bahamas, as well as in the United States in 1826, and subsequently, drop dead from sun-stroke; while others, attempting to escape from the sun's rays, in crossing a few feet of hot, dry, bare earth, become so dried and stiffened as not to be able to move, and thus perish. I have seen bushels of them in heaps that had thus died and polluted the air with intolerable stench of putrefaction. But when in the spring and early summer, especially May and June, we have sufficiently protracted warm, damp, cloudy weather, with luxuriant, succulant vegetation running into diseased condition, the anomis must appear in formidable numbers. When these conditions prevail in a limited district only, the caterpillar is limited in its field of operations; when late, little damage is done; but when early and widely extended, the destruction is counted by tens of millions, whole districts of cotton vanishing in a day, as when, by a sweep of the prophet's wand, the evoked locusts in an hour transformed vernal Egypt into a blackened waste.

The time required for a complete cycle of transformations of this insect varies very considerably with the varied characters of different seasons. Sometimes it remains in one of its forms longer than it requires where circumstances are more favorable to complete its entire cycle of changes during another season. The average for its cycle is about twenty-five days. Mr. Fuller fixes the period at about twenty-two days; egg, six days; caterpillar, twelve days; and chrysalis four days. The moth, very soon after expanding its wings, seeks a mate and commences laying its eggs. We have seen, in

one instance, that from one set of chrysalides to the next succeeding one, only nineteen days intervened. But claiming twenty-two days, as they increase in a geometrical progresssion, it is easy to show, by a very simple calculation, that starting with a single female moth per acre, we may, in fifty days, have thirty-one millions per acre, or six thousand per stock of cotton. Ten, fifteen or more eggs may sometimes be counted on a single leaf.



The Grass Worm.

1. The Worm; 2. The Cocoon; 3. The Moth.

The caterpillar moults five times, and under favorable influences in twelve days increases in weight about five thousand times, and from a minute speck scarcely visible, to nearly two inches in length, having, in the meantime, consumed many thousand times his own weight in food. Hence, there is nothing mysterious in the fact that a field, seen in the morning with all the foliage perfect, may, in the evening, have not a leaf remaining. The larger caterpillars when touched sometimes hurl the head from side to side, as if impatiently trying to strike the offender. At other times, when touched, they leap instantly from the plant. They sometimes cease eating and remain fixed as a statue, with the anterior portion of the body reared aloft; and at other times jerk the same portion of the body about in a violent manner, perhaps to crack the too restricted skin preparatory to moulting. When large enough to seize the edge of a leaf it cuts off narrow strips in such a way as to form a circular sinus in the leaf, the radius of the circle being the length from the anterior pair of ventral legs to the mouth. The mandibles cut with a movement precisely like that of shears. Strips an inch long are cut off and run down the throat with marvellous facility, the initial end of a strip being far down the digestion tube when the final end is severed from a leaf, much after the fashion you may see strips of paper running from the telegram stylus down into the receiving tube. This, like many other caterpillars of this family, has six pectoral legs, eight ventral, and two anal. It is, however, not likely to be confounded with any other except the "grass worm," from which an inspection of the accompanying drawings will enable you to distinguish it, as well as to discriminate between the moths of the two species. With the drawings before you of these insects and the "boll worm" in all their stages and transformations, the eggs of natural size as well as magnified eighty diameters, or about 6,000 times, you need no oral description.

In answer to questions of an auditor, I will say that many conjectures have been presented every year to account for the "two kinds" of cotton caterpillars. There are not two kinds or species. But none of the conjectures as to the cause of some being light-green in color and others nearly black in the main, are satisfactory. My own opinion is that the differences

are produced in the same way as in men, horses, neat cattle, sheep, poultry, dogs, cats, and in other insects. This is very striking in different specimens of the scarabæus tytius, or the great stag beetle, and in the tobacco worm, which vary much in color.

NOTES.—1. In preparing the above for the press, many paragraphs have been omitted, others condensed into a line or two, and in one instance or two a short illustration substituted for others more lengthy and minute.

2. In 1846, Gen. W. L. Brandon, of this county, caught every cotton caterpillar on his farm by hand-picking; thus gathering *thirteen pork barrels full of these worms!* Some two weeks later a strong wind brought in the moth in vast numbers from other farms, where the caterpillar had not been destroyed. Had all pursued the same course as Gen. B., the crop could have been saved As it was, the General, gaining two weeks, made a much better crop than his neighbors, gathering four hundred bales. Concerted action in May and June would render plans 8, 9, 10 and 11 perfectly successful. Some crops, in 1867, were saved entire by hand-picking when the first brood of caterpillars appeared.

3. The first caterpillar sent to me in 1869 was from Mr. F. M. Creswell, June 24th. On 26th it spun its cocoon, next morning was a pupa, and on 6th July came out a moth. Now, had plan 14 been generally practiced, there could have been no anomis in any stage in the county, July 1st, and none then, there could, by no possibility, be any later, except by migration. I am convinced that this moth is at times carried great distances by high winds—perhaps hundreds of miles in a few hours. Although its flight is very vigorous, yet when raised on a strong wind it seems to find it difficult to descend, or, taking advantage of this easy mode of transportation, is conveyed long distances. Witness Way Key mentioned above; and I could adduce other instances going to strengthen the notion of migration of the anomis, sometimes in great numbers. During winter, in regions where they hybernate, they may be seen of warm evenings in considerable numbers. This was specially remarked in the Black River districts in Louisiana in the winters of 1866–7, 1867–8.

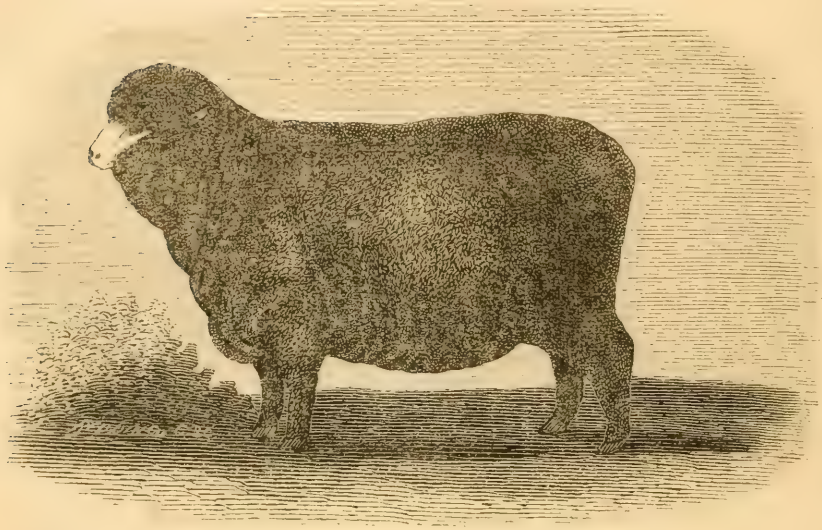
4. The year 1869 was remarkable for the number of generations, these being *six*, viz: the *first*, which survived the preceding winter; the *second*, maturing, as above stated, July 6th; the *third*, maturing August 2d; the *fourth*, September 1st; the *fifth*, October 8th, in fact along from 1st to 15th October; and *lastly*, the progeny of these which did not arrive at adult age, all perishing in egg, caterpillar or pupa state. Even some of the fifth generation, after completing the last transformation, were so debilitated by the drouth and cold as not to be able to burst the pupa case, and I found the perfect moths thus enclosed dead and dry.

5. It should be observed that this caterpillar differs from others in the anterior pair of ventral legs being imperfect and not used in holding or locomotion, and in having two dark specks on each segment of the body in the dark lines of the back and sides, in addition to the single spiracle on the side of each segment. The moth is reddish gray; more gray at first, redder as the down is lost—a dark spot with (*usually*) a minute white dot in the centre on the middle of the anterior wing, and a minute white speck near the root of same wing. General appearance light-bronze above, underneath, light-sulphur or glaucous-silvery.

THE ROCKY MOUNTAIN GOAT.—This interesting ruminant is not larger than the common sheep. He has small, pointed horns, rising straight upward from the head, but at the end curving gently backwards. These and the hoofs are black, while the fleece is all over perfectly white.

This goat has a fleece of long silk hair, equalling in fineness and softness of texture that of the Cashmere. Underneath the long hair is a coat of very fine soft wool. This beautiful goat has already attracted the attention of agriculturists and manufacturers. It cannot be doubted that an animal with so valuable a fleece would be an important acquisition.

The Spanish Merino Sheep.



It is a significant fact that an authentic history of the Spanish merino reaches back to a period of nearly two thousand years.

The fine, rich fabrics worn by the Roman officials in the early days of the Christian era, and which found their way to the courts of most of the nations lying along the shores of the Mediterranean Sea, were made from the wool of the flocks which grazed on the plains of Truditania, in Spain.

Through all the political convulsions which have harassed that country, which have given them their name, through all its conquests and reconquests, this race of animals has sustained itself. It has suffered transportation across the seas, endured the rigors of a cold country, stood the test of acclimation, taken even firmer and deeper root in our soil than it had in the sunny plains of its native Spain, and now the American production of the Spanish merino stands at the head of all other sheep of the world.

But a little more than fifty years ago the first pair of Spanish merinos ever introduced in this country were brought to Cambridge, Massachusetts. So little knowledge of their value had the man into whose hands they came, that they were butchered and eaten. Since that day, three thousand dollars for a single ram and as many hundreds for a ewe, have more than once been paid in this country.

Mr. Richard Peters, one of our most intelligent breeders, in our last number, pronounces this to be emphatically the breed for the South, and we believe he is right in his estimate. A cross with the common breed, however, makes excellent stock.

Department of Agricultural Geology and Topography.

Professor Hilgard's Geology and Agriculture of the State of Mississippi.

Since the publication of my article, "Agriculture in Mississippi," in the May number of The Rural, I have received from a friend in that State a copy of Professor Hilgard's "Report on the Geology and Agriculture of Mississippi," a book of near four hundred pages, which I have read with intense interest. Its teachings, however, have not been of a stimulating character, for all of his agricultural theories, viewed from the chair of science, tend to a single end, to wit: the exhaustion of the soil. I respectfully suggest too, the Professor is somewhat inconsistent and contradictory in his argument, as I think the following extracts will show:

On page 225, under the head of Chemical Manures, when speaking of "Green Cropping," he says, all vegetable matter contains certain fixed ingredients, (i. e. ashes,) which if applied to the soil increases the stock of fertility; but when in the case of plowing in green crops, these mineral ingredients have been raised on the spot where the crop is plowed in, we add by this process nothing to the soil "except the vegetable matter itself, which in its decomposition forms humus, and has been derived from the air." We, however, made these mineral ingredients more available by plowing in green crops, and also increase the bulk of humus; but yet, the Professor says, this is simply a "stimulative process, and can only be practiced at the expense of diminishing the *duration* of fertility—being eminently exhaustive."

On page 240, we read, "the power possessed by the nutritive ingredients of the soil of assimilating from the atmosphere, under the influence of vegetable life, the constituents which form the main bulk of agricultural products, is like the interest bearing power, so to speak, of invested capital. If we *add* or *return to the soil yearly what we have drawn from it in the shape of crops*, the amount of available interest bearing capital *increases*. For what we return in manure is in an *available condition;* and besides this, the action of the atmosphere continually renders available an additional supply from the undecomposed minerals of the soil. Land thus treated, therefore, continually *improves* by culture, and will always yield full crops."

Now, if I comprehend correctly the above two *verbatim* paragraphs, the first teaches that plowing in green crops is a stimulating, exhaustive process; while the second asserts that were we to return to the soil annually the crops we take from it, its productive capacity would be increased.

Prof. Hilgard says the manure of manures is good stable or barnyard manure and night soil. "All the food consumed by animals is derived, directly or indirectly, from plants; in the excrements of animals, therefore, we must find

the indestructible matter which, having been originally derived from the soil, will renew its fertility when returned to it." But to raise cattle simply to increase the manure heap is also an impoverishing system, for it is robbing Peter to pay Paul to allow cattle to eat off a clover or grass patch simply that their excrements may be deposited on the cotton patch. "The system supposed to be infallible for centuries—that of cattle raising for the sake of manure—has at last been found wanting, and has buried in its ruins more than one agricultural commonwealth in the Old World."

On the subject of subsoiling the "report" is very interesting, but concludes the subject as follows:

"When, after exhausting the surface soil, we throw up a subsoil of equal or superior fertility, we shall thus have, in matter of fact, a fresh soil. We can readily exhaust this soil in its turn by the same mode of culture, and then, if our subsoiling has reached as deep as agricultural implements can conveniently go on the large scale, we shall have no further remedy but a regular system of manuring. Subsoiling, therefore, in connection with fallowing, may serve to correct the physical condition of our soil, and to increase the *duration* of natural fertility; but it is not by any means a *permanent* safeguard against exhaustion, which will inevitably arrive, sooner or later, unless we restore to the soil, from an independent source, the ingredients which we have withdrawn."

Thus we are taught by Professor Hilgard that neither plowing in green crops, nor raising cattle to increase the manure heap, nor subsoiling, will retain, much less increase, the fertility of the farm; nor does he tell us that the three combined will effect such an end, but that we must restore to the soil *from an independent source* those ingredients which we take from it. Well, what is that independent source? Is it the guano bed or the lime kiln? No; for he says excessive use of these stimulants "enriches the father, but impoverishes the son." But it is, according to Professor H., "in the conscientious utilization in agriculture of human excrements, both fluid and solid, together with bones, dung and all other offal, now partly used for these purposes, which, beyond a doubt, are the only *universal* preventive of the exhaustion of cultivated lands; for it is they into which almost all the products of our fields are *ultimately* transformed, and in them we shall therefore expect to find all that has been withdrawn from the former. And if, instead of eatables, we raise cotton, we shall have to import a corresponding quantity of provisions. These, when transformed into night soil, would more than replace all the drain on our lands caused by the cotton crops, if properly distributed."

This last paragraph induces me to propound a question, which I trust Professor Hilgard will condescend to answer, and accompany his answer with an article on plantation economy, suggesting some practical method by which the energetic Southern planter can prevent the sterility, if not increase the fertility, of his farm or plantation. That question is this:

If, on the first day of January, a farmer were to buy ten acres of land, and move upon it with his plow animal, and a previously purchased stock of

food for himself and horse for twelve months; and if every particle of excrement, both solid and fluid, coming from both of them during the year, were carefully composted with the refuse vegetation of the ten acres, and applied carefully to the land the following January; and were this system practiced for a series of years, and each year the ten acres planted in cotton, (the price of cotton and provisions remaining the same, the seasons being equally propitious, the labor the same, etc., etc.,) would the successive crops of cotton be sufficiently increased in value to buy more than the stock of provisions purchased originally by the farmer? In short, would the total animal excrement of one horse and one man, properly composted, be sufficient to increase the fertility of a cropped ten-acre lot? D. WYATT AIKEN.

Earliest Notice of the Phosphates.

In the July number of THE RURAL CAROLINIAN, allusion is made to a notice of the Charleston Phosphate Rocks, in the *Southern Agriculturist* for June, 1844, as being an early mention of them. By reference, however, to the "View of South Carolina," by Judge John Drayton, page 40, will be seen drawings of six different shapes of the phosphatic rocks, with a long account of them, and theories as to their origin—published in the year 1802, and probably written nearly seventy years ago. The writer says:

"At the upper part of Charleston District, in the neighborhood of Nelson's Ferry, a stratum of fossil oyster shells stretches in a south-westwardly course, nearly parallel with the sea, towards the Three Runs on Savannah River. These shells are uncommonly large; towards Santee River, they are of a circular form, and of a diameter of seven or eight inches. When first dug up they are hard, and in the inner parts present an enamelled appearance. But the effect of the external air soon dissolves and decomposes them into a limy powder. Some of them were found when digging the Santee Canal."

And, alluding to the regular phosphates, he says:

"Teeth of unusual size have been found in this State, as far south as Stono Swamp; in the latitude of nearly 33° north. Bones and teeth of large dimensions were, in the year 1795, dug out of Biggin Swamp, at the head of the west branch of Cooper River, two miles above Biggin Bridge; and in north latitude about 33° 10′. This was effected by Colonel John C. Sens, engineer to a company for opening a canal between Santee and Cooper rivers. He found them eight or nine feet under ground; among them were grinders, bearing all the marks of a carnivorous animal. Others were of a different and much larger texture, apparently belonging to a graminivorous animal. There was also a large tusk, three or four feet long, which Colonel Sens is of opinion resembled in every respect that of an elephant."

By these extracts it will be seen that the phosphates were known to exist even seventy-five years ago, but the knowledge of their great use and value was wanting. As regards their origin, the writer mentions several theories, and among them applies that of Bernadin de St. Pierre, accounting for the deluge, in his "Studies of Nature," when, supposing it to have arisen from the fusion of ice at either pole, says:

"Then it was that all the plans of nature were reversed; complete islands of floating ice, loaded with white bears, ran aground among the palm trees of the torrid zone; and the elephants of Africa were tossed amidst the fir groves of Siberia, where their large bones are still found to this day."

Such a theory may be as true or as false as any one of the many propounded in our day. Nature has thrown a thick veil over the knowledge of their origin. It is generally acknowledged that they were gathered together and deposited in the Charleston basin by some violent convulsion of nature, but even this is surmise, and we perhaps are no nearer the truth than Judge Drayton was in 1802. Verily, "there is nothing new under the sun."

P. H. M.

Department of Labor and Immigration.

The Labor Question.

Col. C. C. Langdon, of the *Mobile Register*, grapples the vital agricultural questions of the South, in the following manly outspoken way. After insisting that the restoration of the South to prosperity depends chiefly upon the cultivation of the soil, and this can be done only by a judicious system of farming, deep culture, diversity and proper rotation of crops, free use of fertilizers, he adds:

The adoption of this system of agriculture in the South, would effectually and finally solve what is termed the "labor question"—a question that, I humbly think, has caused much unnecessary anxiety in the public mind. Indeed, I think that for putting in full operation the system of culture I have presented, we have already at our command an ample supply of the very best labor in the world, in the negroes of the South. I will assume that by the events of the war, the amount of labor at our command has been reduced three-fourths. Now, I propose to make up that three-fourths by the introduction of labor-saving machinery and improved implements of agriculture, enrichment of the soil and high culture. And with the one-fourth labor that is left us, larger crops can be produced, and more money made than before the war, with all the negroes at our command. Rely upon it, if we adopt the improved system of agriculture, the labor question will settle itself. But under any circumstances, let us stand by the negroes among us, who prove faithful and conduct themselves with propriety. And there are enough of them to answer all our purposes, if we but abandon the old system of cultivating the soil. This must be done, for I insist that no man can afford to hire labor to cultivate a large area of poor land, that will produce only one-fourth of a bale of cotton to the acre. But so prepare your land that it will produce two bales to the acre, (and it can be done,) and then you can afford to hire free labor. Now, bear in mind, it takes no more labor to cultivate an acre of ground that will yield two bales, than one that will produce only one-fourth of a bale. And for the labor we do require, there is none in the world so good and so efficient as that of the negroes, who are here among us, and

who must stay with us. They are at home in the cotton field. We know them, their habits, their peculiarities, and how to manage them. They know us, understand what is required of them, and know how to bear themselves towards us. Besides, we owe it to them to give them employment where they prove faithful, and encourage them to become good citizens. We should indulge in feelings of no hostility towards them because they are free, because suffrage has been conferred upon them, or because they do not happen to vote as we wish them, but should be prepared to exercise a liberal indulgence for the peculiar circumstances in which they are placed and the pernicious influences by which they are surrounded. Treat them with kindness and forbearance, and they will be all right after the present excitement shall have passed away, as it surely will after awhile. I say, then, in all earnestness and sincerity, let us hold on and give the preference to the labor that we have among us rather than embark in forced importations from other lands."

Keeping Accounts with Freedmen.

One of the most fruitful sources of trouble with the employer and freedman, is the want of understanding on the part of the latter of book accounts. The freedman sets in on the 1st of January, for the year, at so much per month. The employer must necessarily open a running account with him, in which he charges him a stipulated amount for every day, or fraction of a day, lost, as well as for goods, supplies, and cash advanced—giving him credit with the stipulated amount of his monthly wages. The book-keeping involves, of a necessity, upon the employer. At the expiration of the engagement the balances in favor of the freedman almost invariably fall short of his expectation. He has lost more time than he has any remembrance of—his expenses has been largely more than he calculated, and with lively suspicions of unfair dealing on the part of his employer, he goes away, sullen and discontented; all, perhaps, for no other reason than that he was unable to keep an account for himself.

A plan has been suggested which we think is calculated to obviate this difficulty, and is, at the same time, simple and convenient. Let the employer provide himself with checks or tickets, representing the price of a day's work—say fifty cents—with fractions of this sum, and at the end of every day pay to the laborer, in these checks, the amount due him. If he has done a full day's work, give him a check for the amount due; if he has done but half a day's work pay him accordingly. When the laborer wants supplies let him pay for them in these checks. In short, whatever transactions may be had between the employer and the freedmen, let the settlement be made at the time, with these checks, as a representative of cash.

Pickens County and Immigration.

The upper counties of our State offer many inducements to the European and Northern immigrant. Fine mountain scenery, a salubrious climate, excellent soil, valuable mines of gold, silver and copper, unlimited water-

power and close connection by railway with the seaboard, give that region an uncommonly large degree of attraction. The advantages to be derived from settling there need only to be properly set before the public at the North and in Europe to be appreciated and sought after, and we are glad to see articles in our up-country exchanges detailing them. Such articles should be widely circulated.

A correspondent of the *Keowee Courier* writes:

"Some of our more sagacious landowners are alive to the importance of establishing factories, and are willing and ready to afford capitalists the most liberal inducements. For example, Mr. Christopher Jones, who resides about ten miles from Walhalla, (the present terminus of the Blue Ridge Railroad,) offers to *donate an admirable mill site, (situated on Little River,) together with one hundred acres of land, to any man, or company of men, who will properly improve it.* The land will embrace the site of the mills and village, extending on both sides of the river. If not objected to, he will invest in the enterprise $10,000 in a capital of $200,000, or $5,000 in a capital of $100,000. When the railroad is extended to the tunnel, (not more than eight miles beyond its present terminus,) it will run within four miles of the mill site.

With the view of encouraging *immigration*, Mr. Jones (whose address is Walhalla, South Carolina) proposes to *donate* to active, energetic immigrants five hundred acres in one body of good, productive land, to be divided into fifty or one hundred acre lots, according to the force of the occupants; reserving to himself the right of working or of leasing to other parties for working, the *mineral veins* which may exist on the tract. This example of commendable liberality, will, doubtless, be followed by other landowners, as the importance of developing the latent resources of this District becomes more generally appreciated.

The Scandinavians.—The papers in those portions of the State where the Swedes and Danes have been extensively imported, are loud in their praises regarding the energetic and industrious dispositions of these foreigners. It is true, they are not adepts at our method of cultivation, but they display a remarkable desire to learn, and do learn rapidly. And why should they not. They are in most cases men of intelligence and even education. The ordinary details of the business of making corn and cotton are not so very difficult after all.

To be Noted.—In a cloudy morning it is a matter of importance to the farmer to know whether it will be sunshiny or showery in the afternoon. If the ants have cleared their hole nicely, and piled the dirt up high, it seldom fails to indicate a clear day, though it may be cloudy until eleven o'clock in the forenoon. Spider webs will be very numerous about the tops of the grass and grain some cloudy mornings; and fifty years' observation have shown the writer that these little weather-guessers seldom fail in their prediction of a fair day.

THE RURAL CAROLINIAN.

VOL. I.] CHARLESTON, S. C., AUGUST, 1870. [No. XI.

"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

SEASONABLE SUGGESTIONS.

As the highest success in life finds its only sure basis in physical vigor, we feel justified in making rural hygiene a somewhat prominent topic of discussion. The subject, too, is more closely related to agriculture than might at first appear, as it includes diet, and diet involves certain provisions in the crops we grow for the healthful sustenance of the body.

At this season of the year the question of diet has a special importance. During the summer improper food acts more rapidly and injuriously upon the system than when the weather is cooler; and the question, what shall we eat? becomes one of great moment.

We are aware that we are treading on dangerous ground when we call in question the fitness of our national diet—"hog and hominy." We might hardly dare to do so had we not at hand, just now, a powerful backer. Dr. F. Peyre Porcher, of this city, the well-known author of "The Resources of the Southern Fields and Forests," communicates to the *Charleston Courier* of a late date an interesting paper from Mr. P. J. Berckmans, of Georgia, on "The Hygiene and food for Immigrants," in which the writer contends that the greatest danger to the European settler in the Southern States arises from the adoption of our diet and habits of eating —our *fried bacon and hot bread.* He truly says:

"A vegetable diet, or at least one in which vegetable elements predominate, seems to be the rule in all warm climates and every semi-tropical country, except in this portion of the American Continent. A diet in which animal elements predominate being necessary by climatic influences to colder zones, the animal proportions increasing as the country becomes more Hyperborean, and decreasing as we approach the torrid zone. Notwithstanding this natural law, the diet of the Southern laboring masses is better suited to the colder regions of the Northwest and Northern Europe than to our semi-tropical section.

"As an evidence of what is here advanced, let one notice the fresh and ruddy complexion of the German agricultural immigrant when newly landed on our shores. Notice the same individual again after six months or a year's residence in this country, when he has at once adopted the diet and habits of the native laboring population. His healthy complexion has vanished; sallow cheeks, suggestive of a system replete with bile, is in most cases seen; his whole appearance has undergone a complete change, and his looks indicate him as a fit subject for bilious or malarial fever, dysentery, or any disease originating from a repleted condition of the liver."

He adds "that the principal articles of diet of the native laboring population, and which are the most conducive to a sallow and unhealthy appearance, are fried bacon and hot bread, which form the basis of every meal; two articles of food most injurious to health when prepared and consumed in the usual culinary style;" and suggests to the immigrant that instead of following the established form of the native population, he should, as far as practicable, continue the diet to which he has always been accustomed, with such modifications as the producing capacity of the country necessitates, by which he will not only retain the freshness of his complexion, but unimpaired health and activity.

Mr. Berckmans is himself an intelligent and well informed European, who has resided a long time in the South and knows what he is saying to be true; and one needs but to look about him anywhere in the Southern country to find sufficient confirmation of his statements.

Now what is hurtful to the immigrant, is hurtful, though not to quite the same extent,

to the native, and Mr. Berkmans' advice in regard to diet may be accepted with immense advantage by our rural population generally.

We have long been convinced that an untold amount of sickness results from the too free use of flesh during the summer. Heat promotes putrefaction, and this change in meat is very rapid in hot weather; so we cannot be too careful not to eat that which is in the slightest degree tainted. Even when it goes into the stomach in a normal condition there is danger. If too much be eaten, or the digestive organs be not sufficiently strong and active, the process of putrefaction may commence in the stomach and diffuse a subtle poison through the system. The fever or the bowel complaint which will follow, will be merely the effort of nature to throw the poison out of the body. Pork, and greasy food generally, should be studiously avoided. Bread and the fruits and garden vegetables of the season, should be our principal articles of diet in summer.

The absurd idea prevails extensively, that fruit-eating predisposes to cholera, dysentery and other diseases of the bowels. Exactly the reverse is the fact. There are no better preventives of these diseases than *ripe* fruits and berries, *eaten in proper quantities and at proper times*. Unripe fruits often do great harm and should be scrupulously avoided, unless well cooked, and even then are hardly to be recommended. Those that are in the slightest degree decayed, are scarcely less objectionable. *Fruits should make a part of every meal in summer.*

These will be novel doctrines to many of our readers. All we ask for them, is, that they be put to the test of actual experience. It is not too late to make a partial application of the theory during the present season.

AN AGRICULTURAL CONGRESS.

A writer in the Augusta (Ga.) *Chronicle and Sentinel*, over the signature of "Georgia," makes a suggestion which is worthy of consideration. It is this:

That there be held, during the Fair of the "Cotton States' Mechanical and Agricultural Association," in October, a general council of the Agriculturists of the South "to inaugurate an annual 'Agricultural Congress,' to counsel upon this great industrial interest; to organize a power that shall be felt, acknowledged, and respected; potent to protect itself against all antagonism; to elevate the standard and advance the cause of progressive agriculture in the Southern States."

During the interim it is desired that the opinions of leading Agriculturists may be expressed, fully setting forth the necessity of such action, in view of the present status and future destiny of this great common interest. We commend the subject to the attention of our readers.

THE COTTON CATERPILLAR.

We take pleasure in giving to our readers this month the able paper of Dr. Phares, on the Cotton Caterpillar, which will be found as interesting as it is valuable. Probably no man in the whole country is better qualified than the author to treat the subject—and certainly no one knows better how to put what he knows into a popular form and make it readable and of practical service. The length of the paper will hardly be an objection in this case, so full of interest and importance is the subject, and so happy the treatment.

We think it may be said without danger of contradiction, that we have here given, including the colored plate and other illustrations, the best exposition of the subject ever published in this country.

THE SMALL GRAINS.

Believing that the cultivation of the small grains (and in connection with them the grasses) may be largely increased with great profit to the planters and farmers of the South, we cannot refrain from calling special attention to Col. Aiken's article on the subject in our present number. It gives the results of *experience*, and is timely and exactly to the point. We hope no one will fail to read it and try to profit by it. Let us make our bread and the feed for our stock, whatever else we fail to make.

ILLUSTRATED.—We hope our able and most conservative contemporary, the *Southern Cultivator*, is not to be transformed into a

mere "picture-book," calculated to attract the eye, rather than simply to inform the mind; but we see it shows a tendency toward the artistic in its July number. While, however, its illustrations maintain the high style of art and finish of that on page 210, its readers will, no doubt, excuse an occasional extravagance of the sort indicated.

ROANOKE COLLEGE.—Our attention has lately been called to this flourishing institution, which is situated at Salem, in Virginia, in a location unsurpassed for its beautiful scenery, enjoying the fullest mail and travelling facilities. The faculty seems to be an excellent one, and the charges reasonable.

AGRICULTURAL STATISTICS.—The Bureau of Agricultural Statistics of the State of South Carolina has issued a series of interrogatories for the purpose of gathering facts and figures illustrative of the character, resources and present condition of the State. The object is an excellent one, commending itself to interest and patriotism alike.

WORK FOR THE MONTH.

Cotton, on account of the backwardness of the crop, is not all laid by, and the sweeps and hoes must be kept moving, the culture being very shallow. In the meantime get ready for the picking by cleaning up gin-house and preparing baskets, sacks, etc. Little picking, however, will be done this month in this latitude or northward. See article in this number on the Cotton Caterpillar.

Corn of the early plantings is, of course, laid by, but the late crop, of which we hope there has been a large area planted, still requires working. Do not neglect it. Grain is likely to be scarce and dear. Make the best of what you have put in.

Wheat, Rye, Oats, etc., must not be neglected this season, and we trust preparations are making for planting largely. Read Col. Aiken's article on "The Small Grains." There is sound advice there from a practical planter, who speaks from experience.

Fodder, if pulled at all, must not be taken off too soon, or the quality and weight of the grain will be badly injured. Wait till the grain has began to shrink. Any one who will make careful experiments to test the effects of fodder pulling on the weight of the grain, and report the same through the press, will be a public benefactor. After the fodder is pulled, it is often rendered nearly worthless, in showery weather, by bad curing. If you can get one day's good sun, or even less, you may bundle in small sheaves, stack, and in a few days pull down again, as the weather permits, and thus bring it through, looking tolerably bright even in unfavorable weather.

Sweet Potatoes must not be forgotten. Pull up the weeds when you can no longer use the hoe. Leave no means untried to make your crop a heavy one.

"*Make Hay* while the sun shines" and turn everything to a good use that will serve for forage, crab-grass, pea-vines, millet, sorghum, etc., and don't spoil your hay in the curing, as is often done.

Turnips may be made to help out greatly if the grain crop should be light; so we hope they will be planted largely. For the white turnips, choose if possible, a rich, deep, sandy loam. The Ruta Bagas will do finely in the same, but a heavier soil suits them quite as well. In either case, it must be very deeply broken up and thoroughly pulverized. It can hardly be made too rich with manures, and the phosphates are especially indicated. If your land has been cow-penned, scatter broad-cast, after plowing ten or twelve bushels of ground bones, one bushel of salt, one bushel of plaster and ten or more bushels of ashes (leached ashes will do) to the acre and harrow well in. If your land has not been cow-penned, spread on twelve two-horse loads of stable manure, and plow it in eight inches deep, then put on twelve more loads and cross-plow four inches deep, following with the top-dressing recommended in the other case, or from two to three hundred pounds of some good phosphatic fertilizer. The seed may be sown broad-cast or in drills, the latter being the most profitable in the end. If you purpose to plant in drills, a portion of the manure may be reserved to scatter in the drills; or you manure wholly in the drill, opening wide deep furrows, into which to scatter the manure. Some prefer to cultivate with the hoe altogether, in which case, the rows may be from eighteen inches to two feet apart. For

the use of the cultivator, three feet is not too much. If furrows have been opened for manuring, cover by throwing two furrows upon them, level with a roller or the back of a rake, draw a light drill, scatter the seeds evenly and cover with a rake; provided, of course, you have no seed sower at hand, with which to save most of this tedious labor. The after culture consists in keeping the patch free from weeds and thinning out to six inches in the row. Sowings may be made when the weather favors, any time during August and September, and even later in the low country.

GARDEN WORK.

Snap Beans may still be planted, making fair crops, if the weather prove favorable.

Cabbage, Cauliflowers, etc., of June or July sowing, may be put out in showery weather, and shaded by sticking a bush or shingle on the south side of each plant. Water frequently, if the weather prove dry. Continue to sow cabbage seed, but you must protect the seed bed from the hot sun by some arrangement for producing a partial shade.

Beets, Carrots and Parsnips will do well sown this month, if partial shade can be given the beds. Bushes stuck between the rows will serve a good purpose.

Turnips may be sown any time during the month. Let the ground be very deeply spaded and made very rich. A dressing of some kind of phosphatic manure should be given if practicable, no matter how much stable manure may have been dug in. You may make your drills about a foot apart for garden culture. Dust the plant as soon as up with a mixture of ashes and lime, and repeat the operation afterwards as required, to keep insects off. Thin out the plants to six inches apart, and keep free from weeds.

Spinach, Lettuce and Radishes may be sown any time during the month.

Onions should be sown toward the last of the month. Scatter the seed thick in drills, the young plants to be transplanted in October and November.

Celery is to be transplanted as soon as your plants attain the right size. See article on Celery in our June number.

Peas of one of the early quick-growing kinds may be planted for fall crop.

Irish Potatoes for a fall crop should be put in this month. Use *whole* potatoes for seed, as cutting tends to make them rot.

Cucumbers for pickles will be wanted, and may now be planted, shading the hills from the hot sun.

THE SEASON AND THE CROPS.

Our crop reports, drawn out by our last circular, are quite full and satisfactory, embracing every portion of the Southern States. We have also before us the monthly report of the Department of Agriculture, at Washington, for May and June, and our Northern and European exchanges, all of which have been carefully examined in order to get as comprehensive a view as possible of the situation. We are compelled to give the results of our inquiries in the most condensed form:

THE WHEAT CROP IN EUROPE.

Full returns of the wheat crop of Europe are not yet in, but that of France is certainly light, and breadstuffs have already advanced in the European markets.

THE WHEAT CROP OF THE NORTH.

The wheat crop of the Northern, Middle and Western States is estimated as far below the average of former years—certainly several millions of bushels less than that of 1869. The estimate of acreage in wheat throughout the United States, made by Mr. Dodge, of the Agricultural Department, shows a reduction of about five per cent., while the yield per acre, it is believed, has also been reduced.

WHEAT IN THE SOUTH.

Fine crops are reported from many portions of the South, and the grain is generally of excellent quality, but the average both of acreage and of yield per acre has declined from last year. Tennessee alone has done the right thing, having a largely increased acreage and a good yield. In this State the crop is believed to be below the average.

OTHER SMALL GRAINS.

To the other small grains the same remarks will apply, in the main, as to wheat, though of oats there was an increased acreage in several of the Southern States, and a fair but not a large yield.

CORN.

The corn crop is generally reported as looking well, though somewhat backward.

The prospects of a good crop are cheering. There is some complaint of drouth in some parts of Georgia and Alabama, and of two much rain in other regions of country; but on the whole the season has been favorable.

THE COTTON CROP.

What the cotton crop of 1870 may be, no man can now tell, and little good can come from our speculations on the probabilities of the case. There can be no doubt, however, but that the present prospect is good for a large crop—not less than 3,500,000 bales and a very favorable fall might give us 4,000,000 bales. The accounts which have reached us thus far are, in the main, favorable. All authorities agree in the opinion that an increased area has been devoted to the plant; and on the old and worn out lands of the Atlantic States, great efforts have been made to increase the yield through the liberal use of fertilizers and improved implements of husbandry.

From some parts we get very unfavorable reports, but on the whole Cotton is looking better than last year, though later, which increases the danger from the caterpillar. Louisiana and Texas make remarkably favorable reports, and Alabama and Florida not much less so.

We make a few brief extracts from our returns, regretting that our space forbids more liberal quotations. Other points on which inquiries have been made in our circulars will be attended to in another number:

SOUTH CAROLINA.

Abbeville county.—The wheat crop is better in quality and about the same in quantity as last year. Oats sowed early in fall, fine; sowings of December, January and February not so good, on account of a dry May. Oats sowed still later in March better than early spring sowing. Barley good, and more than usual sown. About one half of the cotton planted looks promising, especially where fertilizers were used. Much better than last year. The other portion of the crop is late, coming up about the first of June, caused by dry latter April and May. Corn, both late and early, looks well where it has been worked. Too little planted to call it a crop. W. P. A.

Lexington county.—Planters have generally abandoned *deep plowing* in the cultivation of their crops, and the *sweep* is now a universal favorite. We do not object to immigration, but believe no laborers equal to the colored man. We expect very soon to revive our Agricultural Society, and hope then that THE RURAL CAROLINIAN will be more generally read. E. S. J. H.

Chester county.—Cotton is better than at this time last year. About half the crop prospects good, but the late cotton has too much grass. Corn is looking well, with the prospect of a full crop. W. M. R.

Barnwell county.—I have seen many plantations recently, and have heard from a great many more, and find that crops do not compare favorably with last year's crop at the same time, and we all here know it will be impossible for as much cotton to be made as last year. C. J. F.

Charleston fertilizers are doing well in many instances, leading all manures so far. W. H. D.

Darlington county.—As something new, several parties are commencing to plant grapes. Scuppernong varieties, (Scuppernong, Thomas and Flowers,) with the hope of making wine, and as a small moiety of Mr. Frœlich's success, (over $4,800 00 per acre.)

All who plant grapes should endeavor to make as cheap a wine as they do in Europe, then will our wine interest loom up as the million begin to use it as a beverage. J. L. D.

Edisto Island.—Wherever the lands are properly drained, and the working of the crop been carefully attended to, the cotton looks very well; but where the grass or the water has been allowed to stay for days, the cotton looks sickly. The corn crop, generally, looks well, but here very little is planted, say ten acres, or may be less of corn to one hundred acres of cotton. A. B.

Edgefield county.—The cotton prospect is rather mixed. Some planted late and not worked, looks very "sorry." Some early planted and well worked, looks promising. J. R. C.

Anderson county.—The wheat crop is about the same as last year; oats not as good. Cotton promising. W. A. D.

Sumter county.—The prospect for a full crop of cotton is not flattering. Corn is generally good, and with continuation of seasons will turn out well. E. S.

Fairfield county.—The cotton prospect is better than it has been for several years. If our farmers would soak their shelled corn in salt and water twenty-fours before feeding, they will find it not only a saving, but also a great advantage to their stock. ——.

Union county.—Very early planted cotton looks very promising. Corn looks well—the early plantings remarkably well. ——.

Newberry county.—Cotton prospect very good. Corn is looking well.
T. W. H.

GEORGIA.

Clayton county.—Wheat, better than last year; cotton prospect favorable; corn better than for some years. P. H. L.

Newton county.—The wheat, rye and oats crop superior to last year. Cotton prospect favorable. Corn looks well, but little planted.
A. C. C.

Randolph county.—With early planting the cotton prospect is fine. Fertilizers have been extensively used and the best lands planted. Area in corn small—crop looks well.
J. T. B.

Terrell county.—Corn was never more promising up to the present time. Our country is recovering from the effect of the war. All that try are doing well, and will continue to do so. E. G. H.

Brook's county.—The heavy rains are having a bad effect on the cotton, and there is some complaint of shedding lower leaves and forms. Corn, very good. Some reports of the caterpillar. J. F. M.

Marion county.—The cotton prospect in this county is very unpromising, on account of a bad stand and unfavorable weather for working. General Green has possession of at least half that was planted. G. A. H.

Bartow county.—Cotton promises moderately. Corn looks better and has not suffered for rain. J. J. H.

FLORIDA.

Hamilton county.—The cotton crop is promising—the short staple looks much better than the long. Corn crop not as good as usual, and will be rather short. Cane all looks well, with more planted than usual. High-land rice is doing remarkably well. Peaches very poor, injured badly by the curculio. A. W. R.

Alachua county.—Cotton, generally, promises a good yield, but is later from two to four weeks than usual. Short cotton is doing well. The corn crop was never better in this section. Sugar-cane promises well, and should be the staple product of this State.
S. M. C.

Marion county.—The cotton prospect is good so far; but we are having too much rain and fear the caterpillar. Corn better than last year. Sugar-cane looking well and quantity increased. G. W. M.

Madison county.—Cotton very backward; Corn good. Weather very wet. N. B.

ALABAMA.

Lauderdale county.—Our cotton is late and small. The crop will be a small one unless the remainder of the season is an extraordinary one. Our corn is also late, and if the dry weather continues long, corn will be almost a failure. A. M. O.

Lowndes county.—Cotton is backward, grassy and very "sorry." Corn is suffering for want of rain. R. W. R.

Dallas county.—The cotton crop is at least two weeks later than the crop of 1869, and on account of frequent rains is grassy. Though a larger area is in cotton than last year, this county will not make near so large a crop as 1869. The corn is much better than last year, and everybody is making enough to supply his own needs.
A. N. P.

Etowah county.—The small grains are better than last year in quantity and quality. The prospect for cotton and corn is good.
W. P. S.

MISSISSIPPI.

Monroe county.—Cotton was injured by excessive wet and heavy coats of grass, now mostly worked out, growing well and promises a fair crop. About the same quantity planted as last year. Rather more corn planted, but badly injured with wet. Now looking better, and promises an increased yield over the last year, which was very light. W. B. W.

Chickasaw county.—Wheat crop good—better than last year; oats very fine, particularly March sowing; cotton is very small from effects of insects and grass, stands are not good, and in short the prospect is not so favorable as last year; corn stands are good, but in low places it has suffered from wet weather.

Hinds county.—Cotton looks promising, though very small for the time of the year. Corn looks well. K. J.

Clarke county.—Too much cotton planted for the country's good. Prospect *very* good for a large crop. Corn, on some plantations, to our sorrow, none was planted—too much neglected by all. The little there is looks well. J. McC.

RURAL NOTES AND QUERIES.

The Orange from Seed.—Will a tree from seeds of a sweet orange, grown on a sour stump, produce the same kind of fruit as that from which the seeds were taken? An answer from some one who knows by *actual experience* would be of great value to your Florida subscribers, A. F. S.
Oak Bluff, near Jacksonville, Fla.

Oats in the Cotton Field.—The farmers of Newton County, Georgia, according to Rev. C. W. Howard, in *The Plantation*, sow their crop in the first week in August, or at the last plowing of the cotton crop—and among

the cotton. The idea might long ago have been taken from the fine crops of volunteer oats, which almost every one, in his experience as a farmer has doubtless noticed. These crops of volunteer oats always start in August, and though the growth through the summer and early autumn seems very feeble and discouraging, the final result is nearly always gratifying.

Sugar-Cane.—A correspondent in Albany, Georgia, has adopted the practice of splitting his seed cane between the eyes, making one stalk plant as much as two would in the old way. In planting he places the split side down. He has planted in this way for two or three years, and thinks he gets a better stand than when the whole cane is planted.

Deep Plowing and Subsoiling.—Subscriber, Gadsden, S. C. The questions you raise would require pages to properly discuss, and no reply we could give here would be satisfactory either to you or to ourselves. We will endeavor to give our views in full in some future number.

House-Flies in the Garden.—I find my rose bushes and other shrubs covered to blackness with house-flies, which threaten their destruction. What is the cause, and what remedy can be applied? City.

Wire Fences.—Will wire one-eighth or three-sixteenths, let through posts eight feet apart by boring holes, the first two feet above the ground, the second and third one foot each apart, (to turn cattle,) making the fence four feet high, be cheaper and more durable than boards at fifteen dollars per thousand and nails? Thos. W. Holloway.

So far as figures will settle the question, our correspondent can answer it for himself, and we fear we can be of little service. We have small faith in wire fences, however, and if the case were our own, should build of boards, and thus be sure of a fence while it should last. The fence question is an important one, even where timber is plenty, and we should be glad to have the views of thoughtful, practical farmers on the subject.

A New Honey Plant.—A correspondent of the Charlotte *Bulletin*, writing from Marion County, S. C., says:

I have discovered and fully tested a new honey plant, which abounds here, and blooms from May 10th till June 20th. It yields a large supply of the purest honey, delicious to the palate, and clear as spring water. The bush is suitable for yards, as it is very ornamental. Will send you a plant and a bottle of honey for inspection.

The New Curculio Remedy.—Further investigations show that the curculio traps, described in our last number, are effective only while the nights are cool. Later in the season the "little Turk" declines to come down from the tree. The jarring process must then be resorted to, as before.

Black Spanish Fowls.—We know no one here who has any black Spanish fowls for sale at present. Breeders should advertise.

Hedging.—"Zip." We hope to give an article on hedges in our next number, from a gentleman who has great experience.

Ditching.—A correspondent wishes to know what is the best plow to use in ditching.

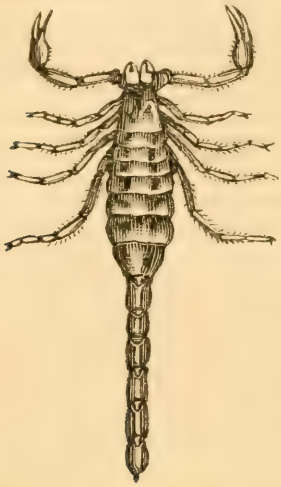
Drilling Wheat.—"A Young Planter" wishes some one to give the result of experience in drilling wheat and other small grains. Does it pay better than sowing broad-cast?

Pea-Vine Hay.—"Young Planter." Build a pen two or three rails high, and throw across it a flooring of rails; build up three or four rails higher; fill in with freshly cut vines; then throw another flooring of rails across, and proceed as before until a pen ten or twelve feet high is made; then roof over as you would a shuck pen.

A Jumping Mule.—A correspondent is in trouble with a mule that has no respect for fences. Can any one tell him how to cure the animal?

The Scorpion.—S. E. T., Duval County, Fla., a settler from the North, desires information in regard to the Scorpion, the presence of which in that country has greatly terrified him. He has little occasion for alarm. We have resided in Duval County, and have seen two or three specimens of the Short-tailed Scorpion (*Buthus Carolinianus*) which, though not a pleasant looking animal, is by no means very dangerous. There is another species, we believe, found in some parts of Florida, and elsewhere in the South, called the Long-tailed Scorpion, (*Scorpio boreus*,) but this is scarcely more venomous. The sting is pain-

ful, like that of a hornet, but not dangerous. J. Parish Stelle, in *American Entomologist*, thus describes the two species:



"Length of body about one inch; color dirty greenish-yellow. The "Long-tail" is a shade darker than the "Short-tail." Our boys sometimes call them tectotalers, from the fact that they cannot endure alcohol. A drop of alcohol or whiskey, deposited upon one of them will cause it to immediately commit suicide by stinging itself to death."

THE OSTRICH.—The author of the article on the "Domestication of the Ostrich," in our June number, sends us, in response to our correspondent "W.," the following note:

Mons. Geofroy St. Hilaire, the distinguished President of the Imperial Societé d'Acclimatation, and Professor of Zoology at the Garden of Plants in Paris, is dead, and I am unable to name his successor. There can be no difficulty, however, in procuring all the information desired by addressing the President or Corresponding Secretary of the Societé d'Acclimatation of France, Bois de Boulogne, Paris. It is probable that the Society may furnish the birds, and give all the directions necessary to ensure their safe arrival here. When I was last in France, that Society was anxious to make exchanges with foreign countries for plants, animals, birds, etc., etc., with a view to acclimation; and Mons. St. Hilaire was particularly inquisitive of me with a view to secure specimens of the buffalo, antelope, and other varieties of animals indigenous to this country. I learn that they have lately introduced the yak from Thibet, the kangaroo from Australia, with other acquisitions unnecessary here to mention. Quite a traffic is carried on in Europe by the different Zoological Gardens and Societies of Acclimatation, in the sale, purchase and exchange of animals, etc., pertaining to their purpose.

There is scarcely a city of note in Europe without its Zoological Garden, which are favorite resorts of the citizens as well as strangers—combining instruction with amusement. That magnificent institution, "the Jardin des Plantes in Paris," is probably familiar to all your readers. At that institution gratuitous lectures are delivered on all the branches of Natural History, illustrated by the superb collections unequalled in the world.

The Zoological Gardens spoken of above, are open to the members, who have a right to admit friends; others are required to pay a small entrance tribute which helps to support the expenses of the establishment; and, if I do not mistake, frequently suffices the disbursements.

Such a purpose commends itself particularly to the South Carolina Agricultural and Mechanical Society, and would do much towards placing that Society on a permanent basis, disseminate useful information in a manner at once pleasing, recreative, and remunerative, and do as much if not more for the Society and the building up of the City of Columbia than any project that could be started.

To return to the ostrich. It is hardly necessary to say that specimens of such animals could be easily secured by addressing our consuls directly at those points of the world where the animals, etc., may be indigenous. What might be difficult and impracticable to individuals would become of easy practice to societies. C.

LAWN GRASS.—I have a circle in front of the dwelling on one of the Waccamaw pine hills that I am anxious to plant in some kind of ornamental winter grass, and would thank you to inform me in your next issue, or by mail, where I can procure seed enough to plant the circle 100 feet in diameter. It was manured last winter from the stable. When is the proper time to plant, how do you plant, and how much seed would be required? Is it a tall growing grass, and would it grow the next year from seed dropped this year?

Please, also, be kind enough to tell me where I can procure a cutting or plant of the "Mrs. Pollock" Geranium, described in your June number.

It may interest you to know that the rice and corn crops on the Waccamaw neck are luxuriant, and give promise of a most abundant harvest. The season has been unusually favorable for corn.

SUBSCRIBER.

Georgetown, S. C.

To make a perfectly satisfactory lawn on a sandy-hill, in our hot, dry climate, is not an

easy thing, unless means of artificial irrigation are at hand. A mixture of Blue Grass and White Clover make the best lawn where they can be made to thrive. Bermuda Grass will succeed anywhere. Your ground must be very deeply broken up. Sow in October or November half a peck of Blue Grass seed, and a pint of White Clover seed, brushing or raking in and going over the ground with a roller. P. J. Berckmans, of Augusta, Ga., could, no doubt, supply you with the Mrs. Pollock Geranium. Any seedsman can supply the grass seed.

Pansies.—Will some one kindly tell me how to make pansies have large blossoms? I give mine rich soil, shelter from full sun, and procure first-class seeds, and get *little violets* in return.

Can I leave bulbs of gladiolus and tuberose in the ground the entire year; and is the Custard Apple, of Florida, a vine; and does it require peculiar treatment? I don't wish to be troublesome, but I do wish to know these few things.

June, 1870. A Woman.

The size of pansy blossoms can be greatly increased by the use of liquid manure, applied once or twice a week. Little can be expected of pansies during the summer, and they often die out altogether in this climate, unless trimmed and cut-back, when they will bloom finely in the fall. Your gladiolus and tuberose bulbs may remain in the ground over winter, but it is thought to be better to take up at least a part of them. In the latter case you can plant them at different times in the spring, and thus secure a succession of bloom. The Custard Apple or tropical papaw, (*Carica papaya,*) to which we suppose you refer, is a tree growing to the height of twenty feet. It is readily grown in tropical or semi-tropical climates.

Shedding Fruit.—I have an apple tree, now ten years old, that has never borne fruit until last year, and then the fruit all fell off before it became ripe. This year there are a good many apples on it, but they have "commenced falling off." Will you, or some correspondent please tell me the reason, and a preventative, if any? And oblige

W. B. S.

We cannot tell the cause without knowing more of the circumstances of the case. Probably the tree is in a diseased condition from some cause, or has been injured by insects; or perhaps the apple curculio has attacked the fruit.

Colic in Horses.—Tell your N. O. subscriber, as "prevention is better than cure," that the use of the following will "infallibly" ensure his horses against ever having colic, and will even break up the *habit* if persistently carried out:

Take four ounces of gum assafœtida, and add just sufficient hot water to dissolve it; add salt to saturation while hot; then stir in enough quick lime to make a thick mortar. This preparation kept in your feed troughs is "infallible" against colic.

Florida Subscriber.

A Cotton Insect.—I observe on my cotton what may or may not be a new fly or bug. The thing, when viewed through a microscope, is, in shape, like a turkey. It has a long neck and bill, is very shy, and flies away as soon as the stalk of cotton is touched, and tries to hide in the dirt. What is it? and how shall I destroy it? H.

Hickman's, Ala.

Another Garden Plow.—Mr. Robert L. Frazer, of Walterboro', S. C., sends us a sketch of a garden hand-plow, which he says has proved very satisfactory in its operations. It seems to be well contrived, but does not differ materially in principle from those already described in our pages. We are glad to see so many at work in improving our farm and garden implements.

Truffles.—Mrs. S. thinks she has found truffles, something like what she supposes that vegetable to be having been plowed up on her farm. We presume there is some mistake. The true truffle, we think, is not found in America. The objects found were probably a species of mushroom, with some external resemblance to the truffle.

MERE MENTION.

——George Husmann is reported as saying that the Cynthiana is the best grape for red wine that is now known in this country.

——Southern fruits often bring low prices in New York and other Northern markets, on account of not being properly assorted, or being put up in the wrong kind of packages.

——Red sweet potatoes should never be sent to Northern markets, as they are utterly unsalable, no matter how good their real quality.

——The quantity of pepper produced per annum is 75,000,000 pounds, namely, from

Java, Sumatra, Borneo, the Malayan Peninsula, the Moluccas, and various regions lying on the east coast on the Gulf of Siam.

——Dr. J. Parish Stelle, of Savannah, Tenn., has been elected Professor of Entomology of the Tennessee Horticultural Society. A good selection.

——The man who will invent cheap irrigation, will be one of the main benefactors of the race. The man who will convince farmers of the full benefit of drainage will be another.

——Brazil is quietly putting forth strenuous efforts to rise into a cotton power. The Manchester Supply Association has just formally congratulated the Brazilian Minister on the production of his country.

——A new seedling peach is announced, christened the "Laurenel," in Monroe, Ohio. It is said to be about the size of Hale's Early, a week or more earlier ripening, much finer flavor, does not rot on the tree, etc.

——In making wire fences on the prairies the materials cost about 50 cents a rod.

——A correspondent of *Appleton's Journal* suggests that instead of enlarging suffrage, it would be wise to restrict it to the heads of families, comprising married men, widows, and bachelors, and spinsters maintaining households.

——Tobacco soap and carbolic soap will drive away most of the insects and worms that eat vines.

——European sparrows have rid the New York parks of canker worms. It costs about $4 to import a pair.

——Geo. Waring harrows his corn across the rows each way, with a harrow which has 120 small steel teeth sloping backward. It kills the weeds and hurts the corn but a little. He can go over eighteen acres in a day.

——Augusta or Georgia melons are famous for their size and fine quality; but some of our truck farmers on the Neck are raising quite as large and good ones. One sent us by Mr. M. G. Vardell weighed twenty-one and a half pounds, and was delicious.

Correspondence.

ENCOURAGE OUR OWN PEOPLE.

[We are sorry to be obliged to omit a portion—he will, perhaps, deem it the most important portion—of our correspondent's letter; but we must adhere to a rule laid down at the commencement of our enterprise—to avoid *politics* in the party sense of the word. Our own special province furnishes work enough for us and our contributors, and we should do little good, and, perhaps, much harm by going out of our way to dabble in the dirty waters of the political puddle. The political papers would, no doubt, be glad to give our correspondent a hearing on the questions he desires to discuss, but we must beg him to excuse THE RURAL CAROLINIAN, in whose welfare we are sure he feels a deep interest, from injuring its influence by publishing his remarks on the party in power in our State. It will be sufficient to say, in order that the reader may understand what follows, that in his opinion we shall get few immigrants to come here till there is a change in the political situation, and another party shall come into power.

As to the "rasping" he had promised, which consists, we suppose, in an application of the foregoing to Col. Aiken and ourself, he is too good natured to hurt much, even were we less accustomed to such operations, and we certainly have no personal feelings to gratify in declining to publish his remarks in full.—ED.]

Editor of The Rural Carolinian:

I promised you in my last a "rasping," not excusing Col. Aiken, and I intend to fill the promise to-day.

You purpose inducing immigration by certain offers of different kinds, which it is not my purpose at present to discuss. I will tell you candidly they will, I am afraid, all be unsuccessful, for men looking for new fields of enterprise do not listen to fine words and big promises; they look matters square in the face. * * * * * * *

Mr. Editor, I want to see our sunny South prosperous and happy, but we are not on the right road. We must take our bearings and try again. We must look below the surface and kindly encourage our own white men, and particularly those who have gone over on the other side of the house. Instead of

abusing them we must invite them to come back and let us be friends still. There are many of our own men to-day as hard pressed for shelter as any foreigner can be; and not so from want of industry either, but made so by the sad termination of the war. They have to seek employment at ten or fifteen dollars per month, and perhaps have a family of five or six to support. Can they save money from that to pay the present high price of land and build on it? It is an impossibility.

Place land within the reach of our own poor men. The poor men look on every immigrant as placing land so much farther beyond their reach. If your large land-owners will each divide a part of your surplus lands into small tracts, say twenty, thirty or forty acres, and reserve alternate tracts for yourselves, and distribute the remainder among the poor white men of the South, you will have served at least three purposes: First, to enhance the value of your land; secondly, to secure a more undivided support to just government; third, to relieve suffering at your own door.

Sell the land at reasonable prices to the poor men on from five to ten years credit, with a mortgage of the same—which I think will work decidedly to the interest of both parties. And I tell you, Mr. Editor, unless there is a better feeling between the property owners and the poor class, the day of prosperity is afar off. Our poor white men are the bone and sinew of our sunny South. Property holders have the brain, and a united feeling will do more good than all the immigrants that can come at this important time of our common country. As long as we have our own men suffering in our midst for lands immigrants will not come.

Mr. Editor, you are our watchman. You must not sleep at your post, and you must remember the interest of all parties, and the welfare of the State. C.

Cooper River, S. C., July, 1870.

CLOVER ON SAND—DRAINAGE.

Editor of The Rural Carolinian:

I thought I was "done task," but you were good enough to put some of my garrulous remarks into your April number, and "Planter" has "poked at me with a sharp stick" for it in the May number.

Why an old marsh tackey, who has been "turned to grass," will kick if you do that; and I feel mightily like showing my blood, even if I can't keep up on my three legs to do it.

There is a great tendency in the Southerner to put his foot on the top round of the ladder at a step, and if he finds he can't do it to try some other thing.

Now, suppose "Planter" should take the first step up by looking about for such a place on his plantation as he has described on the White Bluff Road, (and I venture to say there is not a plantation on Beaufort Island, on which it cannot be found, with the exception of being shaded by trees; and I think shade will not be found necessary.) Manure it well with shell lime; see that it has as much drainage as is common on road-sides; sow White Clover at different seasons of the year; *keep off stock*, and wait on it a while, and, *if it succeeds*, take another step up, and try a little Red Clover; *if it don't*, let him take another look at the shell road, to see what is wanting—for, generally, what has been done, can be done again, under like circumstances, if *pluck* is there.

If I had the opportunity, I would try it myself, with the assurance of success, for I have also seen Red Clover growing (enough to swear by) on a landing in South Carolina.

But "Planter" is grasping at too much. If he could get such a plant as he describes to grow on "high, open cotton land," he would be crying out for some means to kill it.

I don't aspire at being such a benefactor, but I do want to see our Southern planters using the same pluck and intelligence, under their altered circumstances, as that which made them formerly in the culture of cotton and rice as scientific and successful as the agriculturists of any country; and I think that the hints I dropped, in my letter to you, point to the main points to be first attended to.

As I think drainage of the first importance, I will give a few reasons why.

The yearly *bedding* of land to plant on is only easier than *flat* culture, because we have adapted our system to it, from finding that the plant stood the wet spells better, while we overlooked the fact that in dry spells the seed did not vegetate as well as in the alley.

I have seen cotton seed, which had been used for manuring corn, carelessly dropped in the alley coming up, when the corn on the bed would not sprout, because it was too dry; and, after a wet spell, not only this cotton, but the corn would be sickly, because the roots would be water-sobbed; and this sobbing is caused by the flatness of the land, which keeps the water near the surface until it stagnates, or loses its aeration.

Drainage, according to its depth, would carry down this water-level, so that there would be a sufficient depth of soil unaffected by stagnation, for the roots to flourish in. And here the law of capillary attraction comes in to our aid, and will counteract the influence of most of our drouths by bringing up sufficient moisture from below.

Every one has noticed in times of much rain that the surface of our fields, in flat lands, has spots covered by water; now must

we think that this water is all gone when it has disappeared from the surface by evaporation, or must we conclude that it is yet below, and injuring the plant as much as if it were so far in water? We know that rice, although a water plant, requires the water to be renewed, (technically to have a *dash* of fresh water,) or it will not flourish; also, that it must have the water turned off occasionally; and, more than this, that the ditches and drains must be kept deep, so that the ground may become dry for the admission of air; if a water plant requires this, how much more do our common cultivated plants?

There is a seeming contradiction to this theory, up here, where rice is grown in our spring-branches, where running water is kept on the rice the whole time of its growth. This is explained by the fact that *running* water supplies the *air* necessary for the plant, in the same way that a *small pond*, with water running freely through it, will support a much larger number of fish than a *close* pond.

In a well drained soil the water is in constant motion, and becoming aerated. Now, by rain and dew falling upon and sinking *through* it, and then by its rising upwards, during drouth, by the force of capillary attraction. If any one wishes to convince himself of the last fact, let him, during a drouth, invert a tumbler at nightfall on a well cultivated bed in his field, and he will find a plentiful *dew* on the *inside* next morning.

If "Planter" is in earnest about this matter, let him act as he would in going to fish; pick out the *drop*, where from judgment, or the experience of himself or others, he would be most likely to succeed.

A. S.

A HOME-MADE FERTILIZER.

Editor of The Rural Carolinian:

As there are a great many fertilizing compounds now in the market, ranging from the highest to the lowest price, so that either the purse or taste of the planter may be readily accommodated, it would seem almost superfluous to suggest others. But as we have many of the elements of fertility stored away by the bounteous hand of nature in our forests and swamps, and accessible to all, the gathering and compounding or mixing of which, with some of the concentrated fertilizers, can be done by every planter, with much less outlay of money, and, perhaps, with equal if not superior and more lasting benefit to his land than can be attained by the use of the same amount of money invested in the ordinary commercial manures, I am induced to give you the formula of a compound which I clipped from a newspaper and have had in possession two or three years. I do so with the view of soliciting your opinion, or that of Professor Shepard, of its probable value, and that you may give it to the readers of your journal if you think it of sufficient worth. I therefore give it to you (*verbatim et literatim*).

No. 1. Dry Peat;* twenty bushels.
" 2. Wood Ashes; three bushels.
" 3. Fine Bone-dust; three bushels.
" 4. Calcined Plaster; three bushels.
" 5. Nitrate of Soda; forty pounds.
" 6. Sal Ammoniac; twenty-two pounds.
" 7. Carbonate of Ammonia; eleven pounds.
" 8. Sulphate of Soda; twenty pounds.
" 9. Sulphate of Magnesia; ten pounds.
" 10. Muriate of Soda or common salt; ten pounds.

Mix Nos. 1, 2 and 3 together; mix Nos. 5, 6, 7, 8, 9 and 10 in four or five pails of water, or enough to dissolve the ingredients. When dissolved, add the liquid to the mixture 1, 2, and 3, and mix as in making mortar. When thoroughly mixed, add No. 4, (the Calcined Plaster,) which will absorb the liquid and bring the whole to a dry state. Mix under cover in a dry place. Observe the proportions in mixing, small or large quantities. The above receipt will make one ton, which will manure seven and a half acres of land.

This receipt was originally given as a substitute for Peruvian Guano; and I suppose the author, (who is represented to be a good planter,) thought it necessary to state how much land the ton should be applied to.

I will, however, state, before closing, that I have prepared three tons according to the formula, and used it this year on corn, cotton, and cabbage, in quantities varying from one hundred and fifty to three hundred pounds per acre, by the side of Dickson's Compound and E. Frank Coe's Superphosphate, in the same quantity, and hope I shall be able to give you the result of the experiment.

A. H. Johnson.

Orangeburg, June 20th, 1870.

THE SQUASH-BORER.

Editor of The Rural Carolinian:

In your issue of June I observed an article on the *Squash-Borer*. It came happily to hand. I had in my garden about forty crook-necked golden squash plants. They were unusually fine bushes, measuring about a yard across, and about two feet high. The fruit was as large as any I have ever seen. I have two of them, that I have preserved for seed, that weigh two pounds and several ounces. Some two weeks since I observed that one by one they would suddenly wilt and die in a single day. They were planted flat, in land well manured with well-rotted stable

* If Peat cannot be had, use garden mould or clean virgin soil.

manure; earth surface of about six inches, and red clay subsoil. I had about ten days previously applied phosphate and guano, mixed, to each plant, and whereupon, examining the dying plants, I found them cut off close to the ground. I had supposed that the application of the guano and the excessive rains were the causes. Upon reading your article, I at once perceived what was the trouble. You stated that by dissecting the stem of the plant, and removing the borer, you had saved some of the plants. I took my penknife and went into my garden to test the matter. I found, upon close examination, that every living plant was bored. I carefully slit the stem upwards from the point of entrance, which was easy to be detected, and in every one I found a borer. In some of them not less than three. Those not too far gone I think I have saved.

You are at a loss to discover any means by which this pest can be got rid of. I received some months back a circular from some firm in New York, purporting to have a preparation of "CARBOLA," to be admixed with the soil, that would effectually rid it of all insects without injury to the plants. The circular has been misplaced, or I would forward it to you. You would confer a service upon all gardeners if you would inquire into the efficacy of this substance, and inform your readers as to its merits. R.

June 25, 1870.

[We have seen the circular referred to by our correspondent, or something of a similar kind, but have had no opportunity of making a trial of the "Carbola."—ED.]

METEOROLOGICAL OBSERVATIONS.

Editor of The Rural Carolinian:

In the June number of THE RURAL CAROLINIAN, it is stated that the last winter and spring were quite wet throughout the South. By reference to a meteorological register kept by me since the first of the year, I find that it has been rather dry in this section of the seaboard of Carolina. In January, 3.7 inches of rain fell, (three inches and seven-tenths of an inch;) in February, 2.2 inches; in March, 5.3 inches; in April, 2.3 inches; and in May, 2.7 inches—making a total rain fall of 16.2 inches only, for the five months, from January 1st to June 1st.

Meteorologists allow an average annual rain fall of 47 inches for the latitude of Charleston, and as this place is farther South, (being at the extreme Southern apex of the triangle of the State,) very nearly 50 inches must be allowed for its annual average, consequently only about a third of our usual allowance of water had fallen in this locality up to June 1st. The past month of June has been quite wet with us, 9.3 inches rain having fallen, making a total of 25.5 inches up to July 1st—so that half of the year being gone, we have in this section just about received one-half of our annual quota of "the dews of Heaven." J. ST. J. G.

Bluffton, S. C.

WATER-POWER.

Editor of the Rural Carolinian:

A writer in the March number, signing himself "Up Country," leaves his readers interested in the subject of water-power, with the promise to continue and pursue the subject in the next number. Nothing further has been heard from him, and I hope that he will continue his articles so well begun.

Water-power is a great adjunct to farming operations, and if farmers rightly knew how to apply many small rippling brooks passing through their lands, many a dreary and tedious mile will be saved going to mill and back with the allowance, and when ginning time came poor Balaam would graze in quietude, and smile with a degree of satisfaction at the laboring brook upon whose banks he delights to brouse.

Yours, R.

Columbia, S. C.

RAMIE WANTED.

Editor of The Rural Carolinian:

RAMIE AT THE SOUTH.

Some of the planters in the South are not pleased with the ramie plant. A Southern planter writes to THE RURAL CAROLINIAN that he has had some experience with Ramie, and has watched others who have had more; and he has several friends who would be glad to sell all the ramie roots they have got; "and the probability is they would be glad to pay somebody to get the 'durned things' out of the ground." He says it is true, as some have asserted, that "after the second year, weeds are not much trouble," and adds: "Where it once gets a good 'grip' on a piece of land, that will be trouble enough for any planter who tries it as a 'spirited experimenter.' I don't know a man who has got ramie roots who wouldn't be glad to sell them. It will pay well as long as you can find buyers—for the roots."

The foregoing slip is going the rounds of the papers. If it is genuine, and you have no objection, please enclose the address of your correspondent in the stamped envelope herewith enclosed.

I am in possession of the addresses of a number of European agents and manufacturers now wanting the *stalks* of the ramie,

and the "durned thing" has a value in it as a Southern product which will develop and assert itself. W.

New York City.

RICE "CHECKING."

Editor of The Rural Carolinian:

Will some rice planter, who has had experience with alum or salt lands, publish in your columns a practical, common sense article upon the proper mode of managing such lands? I have two fields that for four seasons have checked as soon as long water is put upon them. I have tried twelve, fifteen and twenty-one day's water, and find about the eighteenth day from the time the first water was turned on, whether dry or in water, the rice assumes a dingy color, stops growing, and from ten to fourteen days looks reddish, and about one-third dies. A dry growth finally revives it, new leaves put out, but the plant does not grow well until long water is put on, when it grows vigorously for a week or two, and again checks, turns brownish, and shoots out a small ear, many stalks not shooting at all. Should my harvest flow on such lands be deep or shallow? Will lime or mill ashes improve this land, and in what quantity per acre? Should such land be turned or planted between the stubble? Would the Charleston phosphates be of benefit? W. M. H.

North Santee, 8th July.

ONION CULTURE.

Editor of The Rural Carolinian:

Your correspondent N. R. S., can readily make a good crop of onions in field-culture by planting the sets in *very rich* and finely pulverized soil in October and November, and keeping them well worked with the cultivator and the hoe, but the expense of the seeds (sets) would be very heavy. The better way is to sow the seed in drills three feet apart, in August, if the weather be favorable, if not, in September, tending the plants very carefully while small. The thinnings of the rows to be taken up in October or November, will serve for further plantings, and will do nearly as well as those not transplanted. The most important point is *heavy manuring* with well rotted manure. Wood ashes may be added with benefit. TRUCKER.

THE VOLUSIA ORANGE.

Editor of The Rural Carolinian:

The so-called "*Volusia Orange*," (page 615, July,) is not a new variety, as Dr. Lungren believes. The figure and the description given are exactly the same as a kind of orange cultivated on the shores of the big Lake Calcasieu, in Louisiana, where I saw in one grove orange trees thirteen and fourteen years old. The average bearing of these trees was not so high as that of the common sweet orange.

J. DE R.

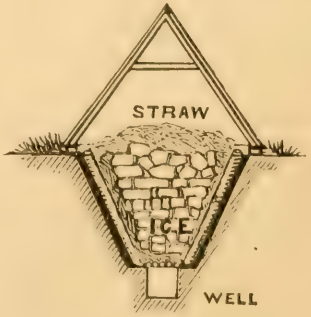
Thibodeaux, (La.,) July 10, 1870.

Department of Rural Architecture.

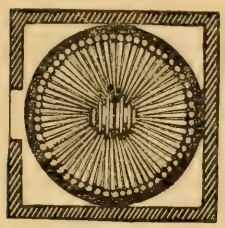
A COUNTRY ICE-HOUSE.

The enormous amount of money expended every year for imported ice, both in cities and in the country, leads us to seek a remedy for such expenditures, and calls upon us to adopt a plan whereby the ice formed on our ponds and streams may be collected and stored for future use.

With the hope that I may be able to induce our people to collect and save ice from one season to another, I have in this number presented to them a cheap, easily constructed and efficient ice-house. The drawings, with a few words of description, will set forth the idea intended to be conveyed. Excavate a hole similar in shape to the inverted frustrum of a cone, to the depth of twenty feet, or more if required,



and at the bottom dig a dry well, to catch the melted ice, the depth of which will be about three feet, and make the diameter about two feet. Cover this well with pine puncheons two inches in diameter and three feet long.



Line the conical hole with pine poles, peeled, and put about ten inches of charcoal cinders between the poles and the earth as a non-conductor of heat from the earth. The hole thus lined is ready for the storage of the ice to begin; commence by laying straw over the poles covering the drip well, and thereupon put the ice, observing to keep a good thickness of straw between the ice and the poles forming the slanting sides of the hole, and after the hole is filled as near full as wanted, cover the whole over with straw.

Nothing remains to be done but to build a shelter over the whole similar to illustration here given.

This is no theoretical ice-house, and the man that builds after this plan may be sure that he will find a very large percentage of the ice, put in the winter previous, there when he comes to open it in the summer.

To Captain F. G. Latham, the gentlemanly superintendent of the Magnetic Iron Works, Union County, S. C., I am indebted for calling to my notice this simple structure on his premises, and from which I have taken my sketches.

ALEX. Y. LEE,
Architect and Civil Engineer.

—— The *Poultry Bulletin* is the monthly publication of the New York State Poultry Society, and is worth the one dollar asked for it to any one interested in fowls and other pet stock. Address Wm. Simpson, Jr., Box 316, New York.

—— The *Mobile Weekly Register* has an admirably conducted Agricultural Department, conducted by that distinguished agriculturist and horticulturist, Col. C. C. Langdon. There is not a better paper in the South than the *Register*. John Forsythe is general editor, and W. D. Mann, proprietor.

Department of Literary Miscellany.

AGAINST THE WIND!

DEDICATED TO WM. GILMORE SIMMS, "NESTOR."*

Your big Balloon! Your Galleon,
Require the breeze abaft!
The silken sail, the silver spoon!—
The swan's down on the shaft!—
And hit the—Devil, late or soon,
Whatever wind may waft.

But hail the head-wind singing through
Our canvas worn and white—
And hail the sea-song tingling to
Our wind-wire straining tight!
This keen, elastic springing through
The arched—unutterable blue—
Against the Devil and his crew,
To HEAVEN like a KITE.

F. O. TICKNOR.

DOMESTIC LIFE IN INDIA.

Of domestic life in India, Mr. Coffin, in his "New Way Round the World," gives some painful yet interesting details. The following, which we quote, is suggestive:

Think of your little rosy-cheeked darling who climbs upon your knee for her good-night kiss being affianced in marriage at the age of five, and at twelve being a bride, shut up for the rest of her days with nothing to do—no knitting-work, no bed-quilts to make, no knowledge of needle-work; surrounded with books, yet not knowing a letter; her room a blank wall; her daily duties for the remainder of her life being the performance of her daily *paojsa*—a worship of a little brass or stone image in the form of a monkey, or a figure with six arms and four faces; hanging flowers around its neck, sprinkling it with water, bowing before it, walking around it, talking to it as little girls do to their dolls, lighting little wax tapers; nothing but this, except to dawdle her children, bring food to her husband, and eat her own, and re-arrange the folds of cloth which answer for a garment; doing this, and sleeping the rest of her time, from morning till night, from night till morning, through the twenty-four hours, the weeks, the months, the years, from childhood to old age.

Such is the daily, unvarying life of the Hindoo women of the upper classes. The Baboos, who read Shakespeare, who know what is going on in America, even to the rappings of the spirits, who will discuss the

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* The poem was written and sent to us just before the death of Dr. Simms, and was suggested by his stirring lyrics in THE RURAL CAROLINIAN, entitled "Lays of Encouragement."

theisms of Theodore Parker with you, are beginning to feel that there is an awkward gap in their system of life.

The Hindoo upper classes, who are too intelligent to be grossly sensual Baboos, repudiate Brigham Young. They are not polygamists; they are fond of their wives, and treat them with respect, and love their children especially if they are sons. But there is no Eve in their paradise. They come home from their counting-room when the day's work is done, read a play from Shakespeare, or an article from Blackwood, or Longfellow's last poem, and then comes the reflection that the wife, so far as this is concerned, is an idiot.

IF.

If you are willing to be mine,
There is, you know, an easy sign
For you to give, me to divine:
Just place the tendril of a vine
Upon my breast.

Let this reveal the trust you feel,
And I shall kiss the mute appeal;
Then with a warmer kiss I'll seal
The treaty for our common weal,
My vine, my rest!

C. W. H.

WOMAN'S STATUS.

See what the Edinburgh *Review* says on this subject:

A woman is a woman, and not a lesser edition of man. The competition, in which we are forever laboring to involve them, has no existence in nature. They are not rivals nor antagonists; they are two halves of a complete being. The offices they hold in this world are essentially different. There is scarcely any natural standing ground, which we can realize, on which these two creatures appear as rivals. The very thought is preposterous.

Shall the woman challenge the man to a trial of strength? Shall the man pit himself against the woman for delicacy of eye and taste? Shall she plow the heavy fields with him, wading through the new-turned mold, or shall he watch the sick with her, patient through the weary vigil? An exchange of place and toil, the man taking the in-door work, and the woman the out-door, in order to prove the futility of their mutual discontent, was a favorite subject of the old ballard-makers, and the witty minstrel is generally very great on the domestic confusion that follows, and gives the wife the best of it. But the fact is that such rivalry can be nothing but a jest. The two are not rivals—they are not alike. They are different creatures—but they are one.

GET INSURED.

Everybody should get insured against accidents. No matter if you belong to one of the "best of families," accidents will happen. Get out a policy. The old proverb says, "Honesty is the best policy," but that was before accident insurance companies started. Now the best policy is a policy in the "Breakneck" Insurance Company.

The other day a man in Chicago fell out of a fourth story window. He had no insurance, and consequently was killed. Another man, on the same day, *fell out* with his wife. He was insured in the "Breakneck," and is ready to fall out again.

A woman driving a spirited horse in St. Louis was run away with. Being insured against accidents, she wasn't alarmed a bit, stopped the horse and came back safe. Her policy running out she neglected to renew it. Shortly after she was run away with again. Her husband's partner ran away with her this time, and she hasn't come back yet. Don't fail to renew your policy, particularly if it is in the "Breakneck."

A boiler exploded at Memphis, blowing the engineer into the air quite out of sight. He will receive $15 a day until he comes down again.

A hog driver in Mt. Sterling, Ky., was very much hurt by a fall—in pork. No insurance.

A man accidentally fell from a steamer at New Orleans into the river. As he was sinking the third time, he suddenly recollected that his policy in the "Breakneck" had expired. He then swam ashore, sought out the agent, renewed his policy, and immediately returned to the river and sank the third time in a serene and tranquil manner.

Hygiene and Household Economy.

A WELL-SET TABLE.

The way in which the ordinary meals of a family are served may seem a small matter to many, and when young housekeepers find their cares increasing, and they look about them for some means of lightening their burdens, they begin oftentimes by slighting some of the very essentials of a well-kept home.

There are few of us who do not appreciate our meals more when neatly and tastefully served. Bright glass and silver, setting off clean table-linen, are certainly good appetizers.

There is true economy in a well-set table, though it might not appear so on first thought.

Suppose a "wash-day dinner" to consist of the remains of Sunday's roast, either cold

or warmed over with the gravy, plain boiled potatoes, and bread and butter, with a cup of tea. There is nothing about such a meal to awaken one's enthusiasm certainly, and it can be made positively uninviting by being carelessly thrown, as it were, upon a table covered with a dirty cloth, which should have been in the wash-tub. Table cloths, no matter how common, if starched and smoothly ironed, will keep clean a week in most families, provided a crumb-brush or scraper is used, and the cloth neatly folded in its creases after every meal.

If any housekeeper, whose time is too much occupied to allow her personally to superintend the setting of the table, thinks it would be impossible to teach the generality of servant-girls to take such care of the table-linen, she is mistaken. By trying the experiment a few times, she can convince any hired girl that it is an actual saving of washing. The penalty of careless crumpling of the cloth, in removing it, should be its speedy dismissal to the wash, which proceeding no girl would care to have constantly repeated through her own heedlessness.

A few pretty dishes, which are not really expensive, will set off the plainest table.

For butter, there are those lovely green plates, representing leaves; their effect, particularly in summer, is charming. And there are pretty red Bohemian, or its imitation, glasses for spoons, etc. Any one's taste can fill out a list of ornamental dishes within the reach of moderate means. But if any additional expenditure for dishes is not to be thought of, make the best of what is at hand.

Don't tolerate a dirty castor; wash and refill its bottles and polish the plated parts, and you will be surprised to see the improvement it makes in the appearance of your table.

The salt-cellars should be freshly filled and carefully smoothed over with a knife, and the salt-spoons laid across the top.

It is not such a trouble as many seem to think to have bright, clean knives at every meal. A few rubs with a cork dipped in brick-dust will remove all stains. If it requires too much time and strength to thoroughly clean silver every week, it will show its gratitude for a generous bath of hot soapsuds, with a little ammonia added to the water.

Of course, all your dishes must be clean and bright to perfect your table arrangements, and it is necessary to place them tastefully.

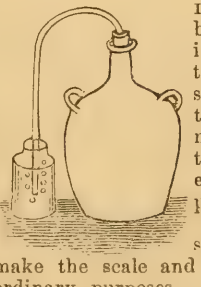
It takes very little longer to set a table well than it does to do it carelessly, and the extra trouble finds ample compensation in the added charms. The next time it is necessary for you to have such a "wash-day dinner" as I have described, I pray you serve it with some of the embellishments I have named, and you will probably find that your hungry husband will forget to growl at the "abominable potluck" of the day, and pronounce your dinner "capital."—*Hearth and Home.*

HOW TO MAKE WINE.

We clip the following from late numbers of the *South-Land.* If any of our correspondents have better recipes, we shall be glad to publish them for the public benefit:

Orange Wine.—Peel the oranges very carefully; cut the pulp across, and squeeze by hand or otherwise, so as to express all the juice. To *one* gallon of this juice add *seven quarts* of soft, pure water, and *eleven* pounds of good brown sugar. Mix the orange-juice water and sugar together, and strain. A five or ten-gallon keg, demijohn, (or large vessel,) may be used, according to quantity of juice. Fill the vessel to the brim or bung, reserving to every five-gallon vessel two bottles of "must," or fresh juice, (as prepared,) to supply the waste of fermentation. When no more fermentation can be detected, (which will be about July,) lay a bag containing about a pound of sand on the mouth of the vessel. After a couple of months, cork or bung the vessel slackly, wrapping a cloth around the cork, and drawing it out occasionally, to let off the accumulated gas. As soon as the weather becomes cold, cork tight; rack off in February, on a cold day, to another vessel, or into bottles, and—drink!

Sweet Orange Wine is made in precisely the same manner, using only *eight*, instead of *eleven* pounds of sugar.



Hints on Wine Making.—No juice is capable of being converted into sound *durable* wine that does not contain sugar enough to supply the alcohol needed to make it keep. Of course, then, where it does not exist, it must be supplied.

Many of the juices are sufficiently uniform to make the scale and the measure serve for ordinary purposes. Among these are the juices of the common Chickasaw plum, the blackberry, dewberry, muscadine, and common wild bunch grapes. In ordinary seasons, one gallon of the juice of either of the above-named fruits, one quart of water and three pounds of good sugar, properly managed, will make good wine.

In extraordinary seasons, when there is much rain, the juice of fruits are poor comparatively, and need more sugar. A *saccharometer* in such cases should be used, and fortunately one is at hand without putting Mrs. Jones to the expense or trouble of "send-

ing to the city" for one. No mixture will make *good* wine that does not contain sugar enough to float a fresh egg sufficiently high to show an area equal to that of a silver quarter of a dollar —if any one can remember how that looks! All of the above juices, after having been well mixed and strained, should be allowed to remain in an open tub thirty-six hours, after which the vessel must be filled to the brim and treated as directed for orange wine. It is a great improvement to conduct the gases by a bent or flexible tube, or siphon, as shown in the cut, to a vase of water, which will act as a valve, allowing the gas to escape, and preventing the return of the air. When the gas ceases to bubble up through the water the wine is "made." Most of these wines will be fit for use in two months, but will not be excellent before the following winter.

THE RURAL CAROLINIAN is clubbed with the following first-class newspapers, at the rates annexed. Remittances in all cases direct to either office:

	Daily	Tri-Weekly	Weekly
Charleston (S. C.) News			$3 00
Richmond (Va.) Dispatch	6 50	4 00 semi-w.	3 00
Augusta Constitutionalist	10 50	7 50	4 00
Savannah News	10 50	6 50	3 00
Macon Telegraph	10 50	5 00 semi-w.	4 00
Columbus Sun	11 00		3 00
Mobile Tribune	11 00		4 00
The Weekly Gleaner, Columbia, S. C.			4 00
Star and Southern Real Estate Advertiser, Marion C. H., S. C.			4 00
Christian Index, Atlanta, Geo.			5 00
Quitman Banner, Quitman, Geo.			4 00
Union Times, Unionville, S. C.			4 00
Gazette, Meridian			4 00
Locomotive, Opelika, Ala		5 50 semi-w.	
The Scooba Spectator, Scooba, Miss.			4 00
Press and Messenger, Eatonton, Geo.			3 00
Banner of the South, Augusta			4 00
"Commonwealth," Marion, Ala.			5 00
Journal, Barnwell, S. C.			3 00
Maryville Republican, Maryville, Tenn			2 75
"Enquirer," Yorkville, S. C.			4 00
"Clarion," Jackson, Miss.			
Shield, West Point, Ga.			3 00
"Examiner," Salisbury, N. C.		6 00	3 00

The following CLUB RATES are offered by the publishers:

6 Subscriptions	$10 00
10 "	16 00
20 "	30 00

Money remitted by mail in *registered letters*, postoffice money orders, at our risk.

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The attention of advertisers is especially called to the following rates of advertising, as no advertisements will be received at less than these rates:

	1 Mo.	2 Mos.	3 Mos.	6 Mos.	1 Year.	REMARKS.
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¾ page	20	35	50	80	140	double rates. Inside
1 column	15	28	40	60	100	back cover, 50 per
¾ column	12	22	30	50	90	cent. added to rates.
½ column	10	18	25	40	75	No advertisements
¼ column	5	9	13	24	40	taken for front cover.
⅛ column	3	6	8	12	20	

No editorial notice given to advertisements on any consideration. Nothing paid for inserted in reading matter.

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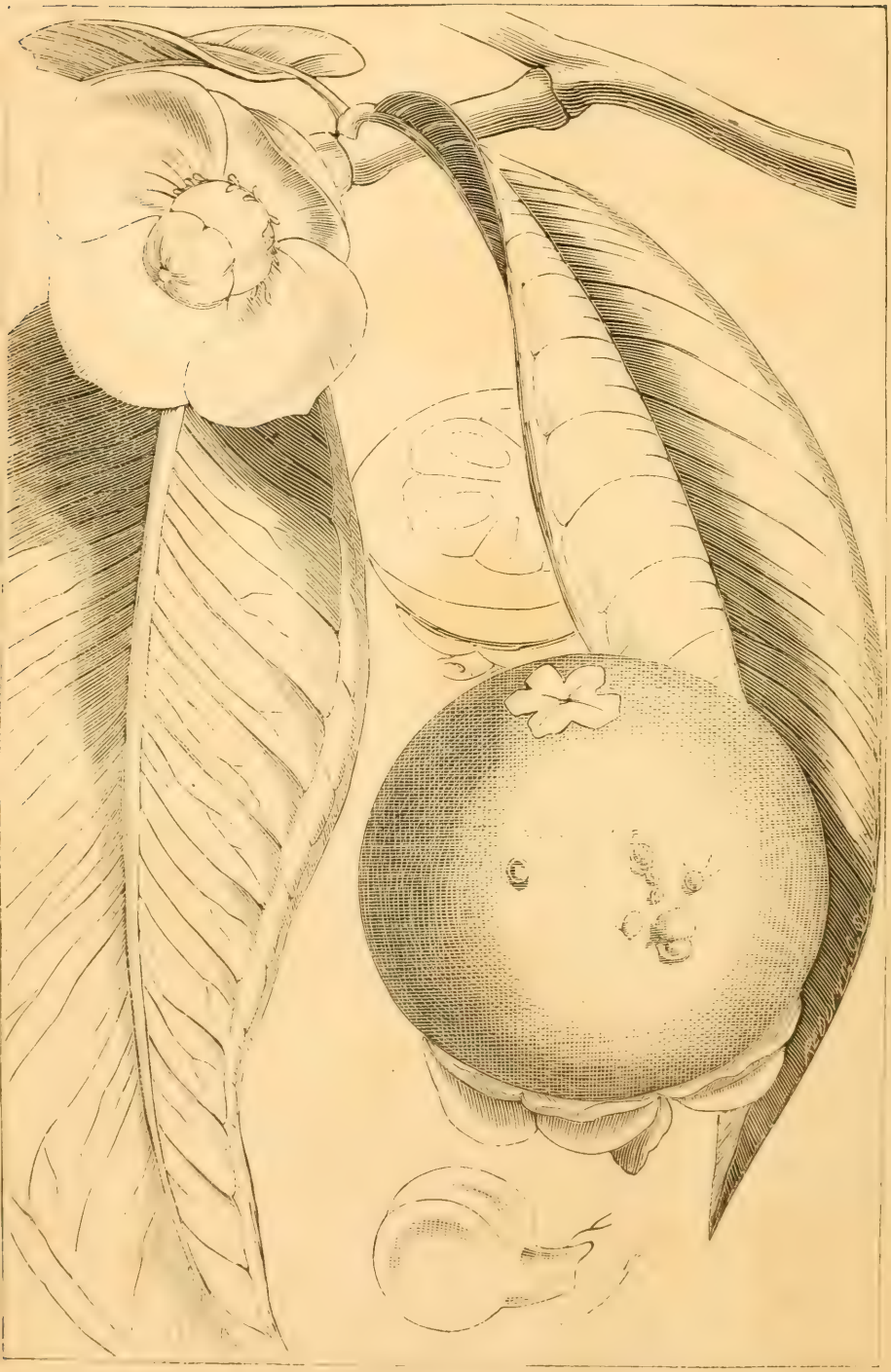


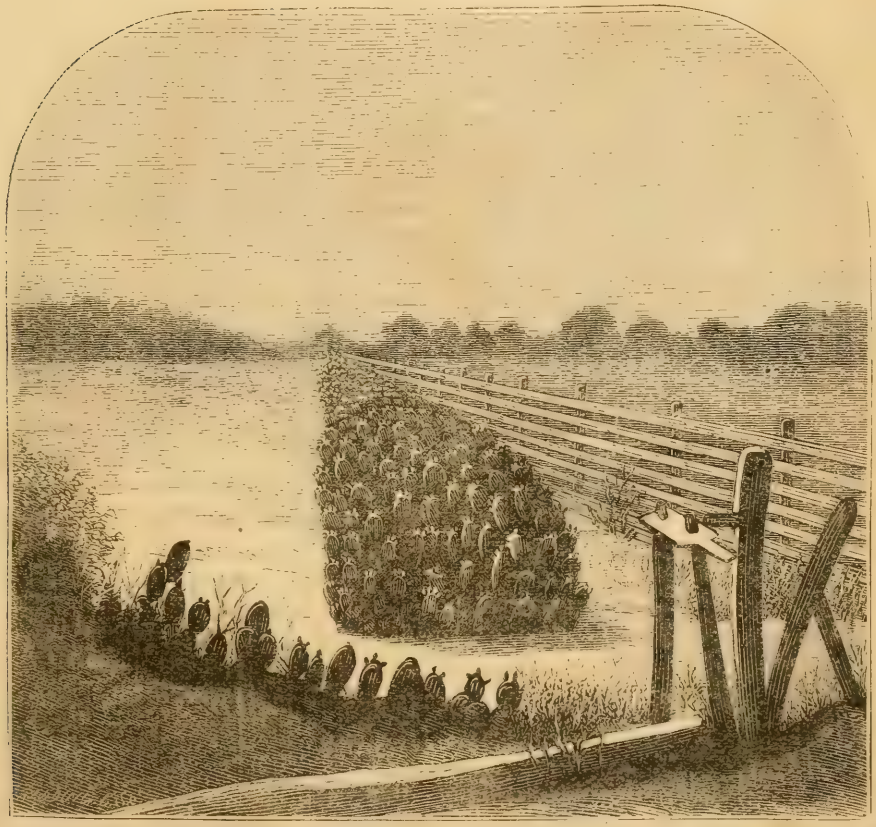
"Mangosteen."

THE

RURAL CAROLINIAN.

Vol. I.] SEPTEMBER, 1870. [No. XII.

Experience in Hedging.



I have been experimenting for a quarter of a century in the growing of hedges, and the fruits of my experience may be of some value to the readers of The Rural Carolinian.

In January, 1846, I commenced hedging with the Cherokee Rose, which I continued from year to year, until all my land was securely enclosed. My

manner of planting, which secured the best results, was to ditch inside and outside, making a bed or bank between the ditches five feet wide at the base; on this bank the fence was placed, and in the bank the cuttings of the briar were planted.

In the spring of 1861 or 1862, a white fly appeared in great numbers on the hedges, sucking the juices from the young buds, which produced a blight, until finally all the hedges of this plant, young and old, perished. I believe, as a species, the Cherokee Rose will soon be extinct.

Belonging to the same class as the Cherokee Rose is the McCartney Rose, a plant of close, strong growth, and in habits of growth eminently suited to the purpose of hedging; but two serious difficulties present themselves in propagating it. Its growth is thickly covered with strong-set thorns and side branches, that would properly be called "scraggy;" the cuttings are awkward to handle, and difficult to plunge properly in the earth; but if patience and care overcome these, the time necessary for it to grow to a hedge is a serious objection. Six years is as soon as a defensive hedge may be expected, under favorable conditions. Yet, for large enclosures, it forms a secure, durable and beautiful hedge. It is unsuited for orchard, garden or poultry enclosures, as it occupies more space than can be afforded from a small lot; draws heavily upon the soil; affords a secure harbor for rats, rabbits, minks and snakes, which depredate your garden, young fruit trees and poultry.

In 1848 I procured from Arkansas some Osage Orange, or "*Bois d' Arc*" seed. This plant has, since that time, been more extensively handled as a hedge plant than all others combined. From those seed, and others afterwards procured, I reared and trained several lines of experimental hedges, and forced them to a success. Some of the lessons learned by practical observation induced me to commence the work of extermination, which has been persevered in, not, however, with success. I will enumerate some of the objections. It is not a hedge plant. It has the upright habit of the Black Locust, Mulberry or other forest trees that form trunks; and though art may, by repeated cuttings, keep it down, yet when a point of time is reached, when this laborious, painful, and often dangerous work becomes burdensome, and is abandoned, it at once resumes its natural habit, grows vigorously at the top, throws off the net-work at the ground, and becomes useless as a protection against hogs, sheep, or goats. In the summer it entirely shuts out from view the field enclosed with it, obstructing one of our pleasant enjoyments, occupying thirty feet on either side with its pernicious roots, (that area of pasturage being reached in ten years on the prairie land of this State, and increased as it grows older.) After frost it presents a sear, rugged and slovenly hedge-row, unpleasant to the eye; pointedly suggestive of humbug. I hold that no sane man this side of the vast plains of Texas, or the Northwest, with the light of experience before him, would introduce this pest on his land. It is not a tenant at will. I have yet to see a place where once planted, it has been rooted out, so I dismiss it with unqualified condemnation.

Buckthorn and Hawthorn, both hedge plants, are unsuited to our hot dry summers. I have not been able, even to a limited extent, to *force* success out of either.

On the vast prairies west of the Colorado River, in Texas, grows a Cactus or the Prickly-pear—a mammoth variety or species. It grows in mounds, or, as termed by Mexicans, "mots," from ten to fifteen feet high. The lobes of this plant are oblong, eight inches wide and twelve long. As a novelty I planted one lobe in my yard in 1848, and having no other name, called it *Palm* Cactus. In 1862, this plant had been extended by the lobes cut from the original, and thrown beyond the yard, taking root. In July of that year, I had seventy yards planted. This was the manner of planting: I selected a piece of land free from grass and weeds, and marked it, so as to put the lobes in line. An Irishman with wheelbarrow and fork placed them on this line, and left them to make the best of the situation. Owing to the confusion and interruption in our regular business during the war, it received no attention; was overgrown with weeds and briars. After the surrender, I saw, in spite of bad treatment, it had grown and exhibited many points of merit, so much so, that I cleaned it, repaired defects in stand, and in 1866 it had improved so much as to form a defensive hedge against large or small animals. Since that time, I have been extending it and studying its character and fitness for general hedging. The results of my observation justify me in claiming for it these several advantages:

First.—The ease and certainty of propagation. The ground is slightly elevated to prevent water standing. The lobes are placed on a line with a cotton hook or similar implement. No earth is necessary on the lobes; yet, to prevent being blown out of line by the wind, in the first effort of growth, it is advisable to put a small quantity on each lobe. It can be planted at any season of the year, yet April or July is most favorable. No digging, trenching, or thorough preparation necessary—only a clean place.

Second.—Neglect, at the outset, always fatal to young hedges, only retards this. It thrives with surprising energy and vigor among briars and weeds.

Third.—Will make a hedge in less time than any other plant. A line inside and one outside of a temporary fence, will in two years, with the fence, protect the enclosure, and in three will stand guard alone.

Fourth.—It is more symmetrical in habits of growth, occupies less space, and with little cutting, which is easily done, can be kept to the precision of a brick wall. The cuttings can be used to extend, or thrown in the line of the hedge entirely concealed from view.

Fifth.—Being, to a large extent, an air plant, it draws less from the adjoining crop; an advantage of great value.

Sixth.—Use and beauty wonderfully harmonize in it. Being semi-tropical, it is a novelty. In spring and early summer, the hedge is daily covered with gold-colored flowers—laughing at sunshine and drouth. In autumn and winter it is loaded with a crop of fruit, pear shaped, magenta colored, and unequalled in quantity, and is indeed "a thing of beauty."

Seventh.—All the labor of cultivation is more than compensated by the fruit, which supplies to all kinds of poultry a food nutritious and healthful. It is also used by many people, black and white, with relish. In addition to these known advantages, the fruit presents a wide field to the experimenter. The color of the pulp is cochineal; and, during the war, our wives and daughters used it successfully, in dying light and delicate woollens. It was set with chloride of tin. In November last, I prepared and had on exhibition at our State Fair, three samples of syrups, the juice reduced by evaporation from seven parts to one. All the samples were superior to sorghum, and one of them was pronounced, by judges, equal to refined syrup. The fruit yields, under hand pressure, seven-eights of its bulk in fluid. To the distiller, this is suggestive. Vinegar of good quality is made from it without yeast, and sweet pickles equal to the peach, at a season of the year when there is no fear of fermentation.

A plant so rich in promise, so full in fruition, not suffering from drouth or affected by frost, long-lived and tenacious, that cattle will not browse, the incendiary burn, or the storm overthrow, certainly claims the attention of the planter.

Manack, Ala. P. T. GRAVES.

Farm-Life in Brazil.

Since The Rural Carolinian has found its way to my new home in the far off Tropics, we hail its monthly visits with a pleasure that only those similarly situated can conceive. It comes from the land which was once my loved and happy home, from among my dearest friends, and its pages bear familiar names.

We have lived here in the valley of the Amazon two years and a half, and can, therefore, speak of the seasons, the soil, the crops, and the people, from actual experience and observation. I shall, therefore, give facts and not uncertain matters of hearsay.

We live about six miles by water or seven miles by land from Santarem, which is situated at the mouth of the Tapajos River, there emptying its waters into the Amazon. By reference to the map you will see that we are nearly under the equator, and yet we are not scorched by the heat of the day, and have cool nights all the year round. This day, June 27th, 1870, at half-past six o'clock, A. M., the thermometer stood at 72° Fahrenheit in my bed room. We plunged it into a jar of water that stood in the air for drinking purposes, when the mercury fell to 58°; we next immersed it in the stream, about forty feet distant, when the mercury rose to 77°, hence you perceive the stream, in the morning, is much warmer than the atmosphere, and the water in a jar is cooler than the atmosphere. We never feel the want of ice to cool our beverages. We sleep under a blanket or quilt every

night the year round. Dews are very heavy here. We have never seen a fog. The water of the Amazon is of a yellowish clay color, that of the Tapajos is clear, and at a little distance looks black; and, for many miles down the Amazon, the two rivers seem to be running side by side, without mingling their waters.

The nights and days are so near of equal length all the time, that, unless a calculation be made, we would suppose them the same. For example, according to the calculations made for a large scope of the Empire, including the province of Para, December 1st, the sun rises at five o'clock twenty-nine minutes, being the earliest hour that it appears. July 1st, sun rises six o'clock twenty-five minutes, being the latest, and there being only ninety-six minutes difference in the rising of the sun for the entire year; an average of about eight minutes per month. September 23d, the sun rises five o'clock fifty-two minutes, and sets at exactly the same hour in the afternoon. March 20th, sun rises six o'clock and seven minutes, and sets the same hour in the afternoon, hence great regularity may be observed by systematic persons.

The custom in regard to meals is a cup of coffee and a biscuit made of *mandioca* or tapioca at sunrise, breakfast at from ten to eleven o'clock, and dinner at five o'clock.

But there is a class of people here who have no system, and eat as they work, irregularly. When the time arrives to prepare a field, they invite their neighbors, who all gather at the house, lounge around, sharpen their *tercados*, (a large knife about twenty-five inches or more long,) and about ten o'clock the owner tells the men to appoint their officers. When the captain is selected, they all go to the spot, and the captain receives all instructions, and the owner has no more to say. They all set to work and cut down the bushes. During the day they are served with a fermented beverage called *terrabar*, made of *mandioca*. Too much of this will intoxicate, but in moderation it is a nice drink. Tobacco rolled up in the bark of a tree, called *toweree*, is smoked all day long. About four o'clock they quit for dinner, and finish up all the liquor. Thus the field stands until dry enough to burn, when another working party plants it, the men digging the holes, and the women putting in the cuttings of the *mandioca*, (pronounced *manioa*.) The cuttings are about eight inches in length, and four pieces are stuck in each hill. The work is now done. In nine months from seven to ten hills will give a bushel of roots, if the yield be good. Of these roots they make *farinha*, which is their bread. For the rest, the rivers supply them with fish. But though food is thus easily obtained, they often suffer from want; for as long as they have anything to eat they will not seek for more. When the last is consumed, and they fail to catch fish, which often happens in certain conditions of the water, they are in want. If you visit them, they are kind and polite, and would give anything they might have, but the trouble is they have nothing.

A small *paliah* house, (the *paliah* is a sort of palm,) without table or

chairs, serves to live in. They sleep in hammocks, eat off of mats on the ground, and use their fingers altogether. They wear but one garment, are generally clean, and bathe often. They regard it no disgrace to be destitute, though an effort would give them abundance. Pineapples, plantains and bananas they seldom get, for they will not plant them. It is a good country for stock, yet they do not own a cow or horse, and one dozen eggs could not be purchased at one house. So with everything else. While it is a country of great abundance, you can get nothing. You must buy your supplies in the city, cut down and burn off your land, plant corn, peas, pumpkins, sweet potatoes, okra, tomatoes, pineapples, bananas, plantains and many other things, and in three months from planting you have more ready to gather into your storehouse than your entire neighborhood would previously afford.

The class of inhabitants referred to in the foregoing paragraphs are a mixed race of Indians and their descendants. More anon from

THE VALLEY OF THE AMAZON.

Demantina, Brazil, June 27, 1870.

Sugar Farming in Louisiana.

In The Rural Carolinian of July, "F.," of Beaufort, S. C., suggests that sugar-cane be substituted for long cotton on the Sea Islands of South Carolina and Georgia. "F." is mistaken with regard to the enormous size of the sugar plantations of Louisiana—"nine thousand or ten thousand acres of land under cultivation."

There are not many plantations that exceed one thousand acres of cane under cultivation. And there are very many planters that do not cultivate as many as four hundred acres. Some few of the old times, first-class sugar-houses cost $200,000. But there are hundreds that did not cost a fourth of that amount. Up to within a very few years, it was very generally thought that the largest sugar plantations paid best, (in proportion to the extent of cultivated land.) The system of labor forced upon us, has brought about an entire change. We are now realizing the fact, that sugar can be successfully grown, and made to pay very handsomely on a small scale. I can direct the attention of any inquirer to the results of the last year's operations of one of our enterprising young planters (a few miles below the city of New Orleans.)

This young gentleman is cultivating less than one hundred acres of cane, which, I am informed, is made to pay handsomely. Recent inventions and improvements have been taken advantage of, so that his sugar-house and fixtures are as complete as there is any need of. The quantity and quality of his sugar compares favorably with the best in the State. The sugar-house and fixtures, on this model sugar farm, cost somewhat less than four thou-

sand dollars. I had the pleasure of seeing a portion of "the hermitage" crop, a few days ago; it was very fine.

I am quite satisfied that sugar farms of one hundred acres, and less, can be made to pay *well*, if conducted with due regard to industry and economy. This opinion is very general among the planters of our section, and I am sure the experiment will be fully tried in our immediate neighborhood the next planting season. If I can be the means of furnishing any information on the above subject, or any other, it will afford me pleasure.

I am afraid the seasons are too short for cane in the latitude of the South Carolina Islands. In this parish, the cane crop of the last season did not feel the effect of frost until very late in December or first week in January. Fifty miles above New Orleans, the frost was a month sooner. Our last frost, of the past spring, was on the 18th of March. I am not yet satisfied that we have it hotter here, in summer, than is experienced along the coast of South Carolina. In the month of June, (just past,) the range of my thermometer compared very favorably with one noticed on South Island, near Georgetown, S. C. Will one of our Beaufort or Grahamville friends note the range of the thermometer at 7 A. M. and 3 P. M., and report? My thermometer is in a cool part of my house away from the glare.

F. W. JOHNSTONE.

Pointe a la Hatche, Plaquemine Parish, La.

Wood Ashes in Agriculture.

If we burn any vegetable or seed, we find the greater part goes into the air, but a small portion varying from one to twelve per cent., remains behind in the form of ash. Thus the grains of wheat burned leave 1.18 per cent. ash; oats, 2.58; potatoes, 2.65; carrots, 5.09; turnips, 7.05; wheat straw, 3.51; oat straw, 5.74; red clover, dried, 7.48; carrot leaves, dried, 10.42. This inorganic part or ash must be derived from the soil. It is of an earthy nature, and can be found only in the earth. The inorganic part, which when burned vanished into the air, may be obtained from the air again, but it is plain enough that the plant must find its mineral food in the soil.

The great advantage which wood ashes have over other mineral manures, is that they contain not one or two, but *all* the inorganic constituents of plants. Plaster does well on some soils, and fails on others, because in the first case sulphate of lime is deficient and in the other it is not, and after a time, even where it does good, its effect ceases, not because the land has become "plaster-sick," but plaster-surfeited, and some other plant food is required. We have known some farmers who, having experienced magical effects from plaster, concluded they could sell their hay and keep up their farms by plaster alone, but we have never known the experiment to succeed for a course of years. The truth is, that in the ash of most plants we find

ten or a dozen elementary substances, and plaster only furnishes two of these, viz., sulphur and lime. These are necessary, and so also are phosphorus, potassium, sodium, magnesium, chlorine, silicon, aluminium and iron, and these can all be found in wood ashes, either combined with each other or oxygen. The analysis of the ash of hard wood shows that all these elements can be cheaply furnished, if we can buy hard wood ashes at twenty or twenty-five cents per bushel. The following is Johnson's analysis of the ash of beech:

Potash	15.83	Phosphoric Acid	3.07
Soda	2.88	Sulphuric Acid	1.35
Lime	63.33	Chlorine	.14
Magnesia	11.29	Silica	1.32
Oxide of Iron	.79		
Total			100.00

Our practice has been to leach the ashes and make soap of the soluble alkalies, and use the leached ashes on our land. These are more valuable than is generally supposed, for only a part of the potash and soda is leached out, while the phosphate of lime and other valuable compounds, being comparatively insoluble, still remain.

Leached ashes can commonly be bought for half the price of the unleached, and for agricultural purposes they are worth nearly as much per bushel, as by leaching they are condensed some fifteen or twenty per cent. Potash is the main ingredient that leached ashes have lost, and generally only four-fifths of the entire amount of this soluble ingredient. For the same money we are confident more valuable matter can be furnished the soil in purchasing leached than unleached ashes. If the land is particularly deficient in potash, or if it is desired to raise potatoes, or any other crop requiring a large per cent. of potash, then buy unleached ashes. But if phosphates or sulphates are wanted that will continue their fertilizing influence for a series of years, then, by all means, purchase leached ashes.

Besides giving back to the soil the mineral elements which are soonest exhausted, and thus furnishing direct food for plants, ashes also serve another valuable purpose in aiding the decomposition of the particles of the soil, and bringing them into a soluble condition. Even the hard flint stone succumbs to the influence of potash and soda; as every one must have observed who is accustomed to use soda in a glass goblet, the polished glass is soon roughened by potash or soda, the silica being decomposed. Hence the wonderful effect of ashes in stiffening the straw of oats, wheat and other grains, by rendering the silicious sands soluble.

We have time to mention only one more benefit from the use of ashes, and this is they furnish the alkalies, which will absorb the ammonia wherever decomposition is going on, and then, by the aid of the oxygen of the air, form nitrates of potash and soda, two very valuable compounds in agriculture. In order to secure their formation, however, we must have the decomposition of some bodies that will furnish the ammonia, and this leads us to say that ashes will act with more force when the soil is enriched with

ammoniacal manures. If we wish to find nitrate of potash, (saltpetre,) we look for it in the soil under barns or horse-sheds, where the urine has settled and where the rain has not dissolved the nitre. From the rich soil of such localities our fathers leached their saltpetre from which they made their gunpowder. Unless nitrogenous manures are used in connection with ashes they will fail after a time to exhibit much virture, but when the land is properly enriched, ashes operate with full force, and their effects continue for many years.

ALEX. HYDE,

[*In Country Gentleman.*

Port Wine and the Port Wine Country.*

Port wine was introduced into England some three hundred years ago, and was at first used exclusively as a medicine. It was first produced on the banks of the Lima River, which empties its waters into the sea at Viana, Portugal; but afterwards it was discovered that grapes grown on the banks of the Douro produced a richer and far more generous wine; and soon the merchants engaged in the trade settled in Oporto, from whence the trade has continued to the present day.

The Wine Country.

The wine country is along the Lower Douro, a stream called the Corgo separating the Lower from the Upper Douro. Along each bank, for the distance of nearly thirty miles, and varying from six to eight miles wide, are the vineyards. Limestone rock, clayey slate, and red clayey soils compose the formation of the hills or mountains, sometimes so precipitous that it is no very easy task to climb them, as their elevation is many hundred feet above the river, with the vines planted frequently to their very summits.

Every hill is cut into innumerable terraces, the walls forming their sides being about five to six feet high, and composed of large stones—for any slight structure would quickly be washed away.

The situations regarded as best calculated to produce the richest grapes are those on the sides of the hills facing the south, and which enjoy the greatest quantity of sun; the lowest and most sheltered spots being in greatest

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* Condensed from an article by F. R. Elliott in *The Horticulturist*, for April, 1858.

esteem. The grapes growing near the summits of the mountains are more watery, and form a lighter and thinner wine. The labor and expense incurred in the formation of these vineyards may be imagined.

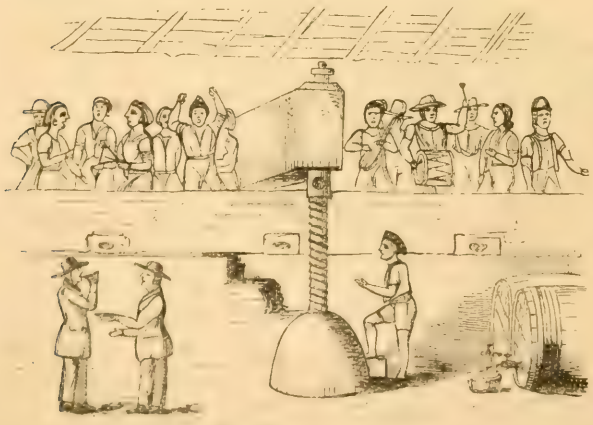
THE VINTAGE.

When once the vintage has commenced, time is invaluable; but this period varies in seasons, same as here, from early in September to the middle of October. Those who fear rain-falls and cloudy weather commence gathering early, even before the fruit is ripe, while the more bold and venturesome leave the grapes to hang as long as possible. During the gathering, the vineyards are crowded with men, women and boys—some plucking the choice bunches of sound grapes, some the rotten or imperfect ones, and placing them in baskets which are carried up and down the steep hills to the press by a class of Spaniards called Gallegos, who labor there only during the vintage, returning to their homes immediately afterward.

Grape Gathering on the Douro.

THE WINE PRESS.

The presses are constructed in buildings and vary in size; they are tanks about twenty feet square, and two to three feet deep, built of massive stone work, and raised considerably from the ground. The *tonels* or casks into which the wine is run sometimes hold thirty pipes. They are generally in a lower building, so that the wine may run off from the press by a channel into them. Above the press is a vast beam, weighed down by a heavy stone, intended, by placing boards beneath it, to press the last remaining juice from the husks.



The Wine Press.

The mashing and pressing the grapes is performed by twenty or thirty of the men getting into the vat or tank with their trowsers' legs rolled up, and dancing, keeping time to the music of fifes, fiddles and drums. The grapes are thus trodden under foot for two, three, and four successive days, with intervals only of six hours, or till the juice is supposed to be thoroughly expressed, and the skin well bruised to extract the color, for it is in the skin

alone the color is found. The wine is then allowed to ferment with the husks for about the same length of time, according to the greater or less degree of saccharine matter. The *must*, as the juice is termed, is then drawn off into the *tonels*, and *brandy* is added, when it is carefully sealed up till the winter. The husks are now pressed, and the liquid is designed for the use of the laborers, or for making into brandy.

The *Lagrima Christi*, a delicious white wine, is made from the first juice run from the grape without pressing the skin. The impression of some persons, that *pure* Port wine has had no addition of brandy, it seems has no foundation; for not only is brandy added at the time of pressing, but afterwards, before it is shipped, the merchant treats it to a little more *delicate brandy*, claiming that such is requisite to its keeping and retaining the characteristics desired.

The grapes grown on the Douro from which Port wine is produced, become, when hung up in the sun, perfect masses of sugar, and give to the wine a rich, fruity flavor.

Winter Pastures.

In spite of our summer drouths, there is always forage in the South during the hot season. Our cane-brakes, and the wild grasses of the woodlands and swamps, though they do not furnish the best possible food for stock, will always ensure them against starvation, at least, where they can have a fair range. But in addition to this—saying nothing at present of millet, sorghum and drilled corn, or of cow peas—we have crab grass enough and to spare. We are told that this is not a grass country. On the contrary, it is the best grass country in the world. Grass is our great pest. We spend the whole season fighting it, and yet we buy hay at the North at heavy prices. This crab grass makes good summer pasturage, and excellent hay. We are accustomed to neglect and despise it, because in the cotton-field it is a weed and a nuisance. It is not a good crop to grow with corn or cotton, but separately it can be cultivated with profit, both for pasturage and for hay, and we need not despair of a crop where anything will grow. We have more to say of it at another time, and propose to prove that even crab grass is a blessing, and may be made to pay. Our present purpose is to show how we may best provide for our stock when this and other summer grasses fail.

In the first place, rye sown in September, as shown in our last number, by Colonel D. Wyatt Aiken, makes a winter pasture that can hardly be excelled; and it will grow on the poorest land (but better on good land) and produce a crop of grain in addition to the winter pasturage. Here is one resource open to all, for we know no part of the country where rye will not flourish. The straw will help out for the next winter's food for the stock.

Barley will do well only on highly enriched land. It may be grazed, but is better used as cut-forage for soiling. It may be cut twice and yet produce a fair crop of grain.

If a permanent winter pasture be desired, there need be no serious obstacle in our middle and upper country. Here, in the low country, the practicability of such pastures has hardly been demonstrated, but we fully believe that there is scarcely a plantation where many acres cannot be found suitable for the purpose of growing winter grasses.

Rev. C. W. Howard, than whom no man in the South, probably, knows more about the cultivated grasses, tells the readers of *The Plantation* how to make a winter pasture as follows:

Manure as much land as you can this fall and very early in the fall, for small grain—either wheat, oats, rye or barley. If you have not plenty of barn-yard manure, buy other manure—guano or superphosphate—according to the grass you design to sow with the small grain. If clover alone, the superphosphate alone; if clover and grass, a mixture of guano and phosphates. Do not be afraid of spending too much money on the manure. Remember, if your grass does not pay you back the first season, you will have made your acre of land now worth $10 then worth $50.

Take an old broom-sedge field, turn it over well with a two-horse plow, harrow it in the same way that it was plowed, not across the furrows, manure as heavily as you can, sow your grain, harrow in both manure and grain, then sow your clover and grass and roll or brush them in, and the process is complete.

After the grain is cut, let no stock of any kind go on the field until the grass and clover have gone to seed.

Afterwards, the treatment is as follows—it may be for years: Keep the pasture shut up most rigidly until your stock have had the run of your corn and pea fields, say until Christmas. Then turn them on your grass and let them stay there, until other grass comes in the spring. Give your winter pasture a little time to recover, while the sedge or woods grass is fresh, then put them back on your winter pasture until your stubbles are open; then shut up your winter pastures until Christmas, when your stock can again be put upon them. If you have twenty acres in good, heavily manured winter pasture, you can carry through the winter, twenty colts, or twenty cattle, or one hundred sheep, without cost, except their salt. In all good winter weather this stock can be penned on ground which you desire to put into grain or grass in the fall, so as to save the first necessary outlay in special manures. Every acre thus manured will make an annual return of at least $10 per acre without appreciable labor on your part.

In regard to the kind of grasses to be sown, Mr. Howard recommends a mixture, and expresses the opinion that the grass that yields the most winter food is undoubtedly Tall Oat Grass, (*Evergreen Grass—Arrhenatherum avenaceum;*) next the orchard grass; next the blue grass. Clover, both red and white, are very necessary, and they come at once, and the grasses come in slowly. The red clover will soon disappear; the white will remain, and will become an exceedingly useful element in the pasture. At certain seasons it will salivate horses, but not at the time in which you will use a winter pasture.

He advises to sow four quarts of red clover, two quarts of white clover, one bushel of meadow oat, one bushel orchard grass, four quarts of blue grass per acre.

In regard to the more sandy lands of Southwestern Georgia, (and the same remark will apply to our coast region in South Carolina,) Mr. Howard says:

It is possible that clover, even on land highly manured, may not thrive; though this I doubt, provided the clover be not pastured after June. But there is a winter grass which is native to Southern and Southwestern Georgia—the wild rye, or Terrell grass. This will grow anywhere, but to be valuable must be sown on land naturally or artificially very rich. Hogs will not graze this grass, but horses, cattle and sheep thrive well upon it. It equals any other grass except the meadow oat in the amount of winter food which it yields. As the seed is light, at least two bushels should be sown to the acre. It yields a quantity of seed. A half acre of land would afford seed for a considerable sowing.

Much more might be said on this subject, but the foregoing will suffice to set our readers to thinking, and, we trust, to experimenting in the line we have indicated. Let us have the results of experience on the subject of grasses carefully noted, and clearly but concisely reported. We wish our readers to know exactly what can and what cannot be done in our soil and climate.

Two Sides to every Question.

Red clover will grow and yield a large crop of delicious hay on clay land anywhere in the South; but our seasons of late have become so precarious I fear this is not *the* grass for the South. Sixty-eight and sixty-nine were trying years on all summer crops, and especially so on the grasses; and the first cutting of clover this year was but a third of a crop, in consequence of the severe drouth of last spring. After the rains set in in May, clover grew most rapidly, and by the 1st July appeared to be ripening its seed. The intensely hot weather again matured it prematurely, and cut off the fall crop at least two-thirds. To-day, July 29th, my clover lots are covered with a black stubble, as if entirely dead. Anxious to learn the experience of others on this subject, I wrote to a friend, who replies so well to the point on this and one or two other subjects, that I give his letter, though not intended for publication. He says:

"My clover was used up by the May drouth. I mowed it early to give the second crop a good chance. The rains caused it to take a fine start, but for the last five weeks (July 20th) we have had no rain; hence the crop is burnt up—a dead failure. It looks as if a fire had passed over it. I did think I would let it alone until late in September, then manure heavily, turn under, and sow in small grain, and let the clover reset itself. I find, how-

ever, there are no seeds in the heads. My next idea was to break up deep with a subsoil plow in September, manure heavily, and sow in rye thickly, allowing both the rye and clover to grow, and mow the whole concern for hay. I am sure it would help our old clover to break up the land deeply in February, manure well, and roll it."

These are the views of a thoroughly practical man, who has experimented largely with clover, and may suggest ideas to others just beginning to embark in this branch of Southern farming. This same friend, dejected by the dry weather, writes:

"I have about concluded all this subsoiling and thoroughly preparing our lands is all bosh. While we are at this double work the less careful scratch up their lands in a hurry, get in their crops in good time, secure a stand, and suffer as little from drouth as we do. I have an illustration right under my eye: While I was subsoiling, cross-plowing, harrowing and rolling my land, my neighbor was scratching his land (land very similar to mine) about two inches deep. He applied two hundred pounds of fertilizers. I applied three hundred pounds. We planted the same day, and to-day his cotton is almost twice as high as mine. I believe if I had subsoiled until I struck water the soil would have been just as dry as it is."

My friend's cotton is burned by too much caustic fertilizer. I have a case in point. Last spring I turned over an acre of oat stubble (gray land) with a two-horse Brinly, followed in each furrow by a two-horse Murfee. The cotton rows were horizontalized thirty-three inches apart, and manured with two bags (334 pounds) of Wando; the beds were completed and the seed planted on the bed above the Wando. During the spring drouth enough cotton came up to secure a tolerable stand, which was "chopped out," after siding, and then the bed thrown up again. When the rains set in cotton came up as if it had been broadcast on the land. The acre was again sided and chopped out, and a full stand left of stalks, varying in height from two to six inches. By the 1st of July, all the stalks were the same height, and had grown well. Since that time, I have had no rain, and to-day, July 29th, that acre wilts earlier in the day, seems to suffer more from the hot sun, and has more yellow leaves on it than all the other seventeen acres in the field, which were not subsoiled, and only manured with one bag of Wando per acre. The average height of the cotton is about the same all over the eighteen acres. This experiment, with similar experience heretofore, convinces me that commercial manures, when applied more than 200 pounds per acre, should be sown broadcast for all crops. Subsoiling is with many planters the *sine qua non* that enables crops to resist our dry and burning summers. I have not found this a panacea for all the ailments of our summer crops, for I have subsoiled land in February, and after a washing rain in April, (not being able to plow the land while in high season,) have found it, by May, too hard to plow and not mellow enough during the remainder of the summer to keep the crop in a healthful state. Will not some of our correspondents give us their experience in subsoiling, and its effects? D. W. A.

The Best Depth to Sow Wheat.

Fig. 1.

In the "Annual Register of Rural Affairs" for 1869, published by Luther Tucker & Son, Albany, N. Y., and edited by that well known agriculturist, J. J. Thomas, we find a record of an interesting series of experiments in wheat sowing, of which the following are the results:

Planted half inch deep, the plants came up in five days; planted one inch deep, the plants came up in six days; planted two inches deep, the plants came up in seven days; planted three inches deep, the plants came up in eight days; planted four inches deep, the plants came up in ten days; planted six inches deep, the plants came up in twelve days.

Fig. 2.

Fig. 3.

Five weeks afterwards there was no perceptible difference in that planted half an inch and an inch deep; that planted two inches deep was not quite so good, so on decreasing in quality as the depth of planting increased. At six inches there were but very few slender stalks. As the crop approaches maturity the difference between the shallow and deep planting becomes less obvious—so that one inch and three inch planting are not greatly different in their results, although the deeper planting is a little later in ripening, and is hardly so productive. For this reason wheat planted with a good drill on well prepared and rolled ground, where it may be put in with great evenness, ripens more uniformly, and brings a rather better return than wheat sown broadcast and covered with a harrow at all different depths. For the same reason twenty-five per cent. in seed is saved by using the drill. That is, a bushel and a half per acre will answer the same purpose, if properly drilled in, as two bushels sown broadcast and harrowed. In a light loose soil the depth may be greater than in one more heavy and compact. A greater depth is required during a time of severe drouth than when the soil has a good supply of moisture. As a general average, a depth of two inches is enough. One inch would be better if the soil were sufficiently moist; but it is difficult to get a drill so as to deposit the seed uniformly so shallow.

Fig. 4.

NOTE.—Fig. 1.—Effect of deep and shallow planting. Fig. 2.—Strong growth of young stool sown shallow. Fig. 3.—Young wheat plant from deep sowing, with feeble roots below and striking new roots near the surface. Fig. 4.—Young wheat plant from shallow sowing, with strong roots.

MUCK should never be taken to the field direct from the swamps. It should be exposed to the atmosphere for six months or more, the longer the better, and composted with lime or unleached ashes.

Scarlet Clover for the South.

"The late William N. White," *The Southern Farm and Home*, says: "Among the many benefits, which, during his too short life, he conferred upon the agricultural population of the South, introduced a few years ago, and sowed upon a small patch of ground near his house at Athens, Ga., a species of clover, known as the Incarnate or Scarlet clover (*Trifolium Incarnatum*) which has yielded since the first year, fine pasturage during the months of February, March and April, and then at the rate of about two tons of excellent hay per acre. We frequently saw the patch in bloom, and a more beautiful sight cannot be imagined, especially by one buying 'northern hay at $2.50 per cwt. and hauling it from the depot.'

"We find in the *Cultivator* for July, 1867, published a few days before the death of Mr. White, an article on this species of clover, translated from the French of *Mathieu de Bombasle*, which we copy for the information of our readers.

"Mr. White sowed his patch in August on soil of medium quality, at the rate of sixteen pounds of clean seed per acre. It came up during the fall, grew all the winter, was pastured by calves and hogs during a portion of the winter and early spring, and the hay was cut in May, yielding two tons to the acre."

"Plenty of forage," Mr. White says, "can be made with this plant as cheaply as northern hay can be bought *at the place where it is grown*, (not at the depot.) After the seed is once obtained it seeds abundantly, and the seed in the chaff are easily saved." M. De Bombasle says:

The Scarlet clover has been long cultivated in Southern France as an excellent forage crop. Of late years it has been introduced in some of the more northern departments, where it has succeeded very well. It is no more sensible to frosts than the ordinary clover, especially if sown early, so as to become well rooted before winter. * * * * One ought not to pass the end of August before sowing is finished.

The most valuable property of this plant is that it may be cut in the spring fifteen days before other clover and ordinarily before lucern. It gives but one crop if cut when in bloom, which only happens where one has no need of green forage early in spring; but when it is cut before the heads appear, a second crop can be cut, but it will be weak unless the soil is strong. Strong soils will be found most profitable for all forage crops. It is not very

difficult as to choice of soils, but light sandy or gravelly soils is much better than clays or heavy loams.

This plant must be sown by itself, and may succeed any cereal or other crop. Consumed green, it is a valuable forage, and it comes at a time when stock are not particular about green food; but it is inferior to clover, whether used green or made into hay. One sows, ordinarily, about sixteen pounds of clean seed per acre, or its equivalent in seed left in the head. (Four bushels of seed in the chaff are equivalent to sixteen pounds of clean seed.—Ed. F. & H.) The last method is preferred, as the seed is more sure to vegetate, probably because the envelope left on the seed preserves moisture and facilitates vegetation. This plant likes a firm bottom; thus in a light soil not infested with weeds it is thought better not to work it deeply after the preceding crop, but to prepare the surface merely, and then sow broadcast and harrow thoroughly. On some soils thorough harrowing is quite sufficient preparation, but if the land be foul it must be plowed, but not deeply, and well harrowed before and after sowing. M. DE BOMBASLE.

A Hint to Agricultural Writers.

I have read with pleasure and profit the practical results of the application of scientific principles as published in the columns of your valuable magazine. The interchanging of the opinions of scientific men, based upon the results of practical observation, in reference to the most successful mode of farming, the best kind of farming implements, the most economical mode of renovating exhausted lands, the cheapest and most available kinds of fertilizers, the kinds of grasses and crops adapted to the various sections of the country at large, with the amount raised per acre on any given system—in one word, a theoretical exposition of the animal, vegetable and mineral resources of the Southern States, reduced to a practical theory, will not only be beneficial to those who read such essays, but must, and will, develop those latent resources of the sunny South, which, for a long series of years, have remained buried, dormant and unknown.

But, sir, it is not my purpose to eulogize such writers, or to expatiate upon the propriety of such essays; I merely wish to call their attention to the fact that there is too often an omission on the part of some of them, which may not only cause many to fail to bring the theories given into successful operation, but may still further bias those prejudices against what is vulgarly called "book farming." The omission, I refer to, is a failure to give all the leading points embraced in a given theory from which success emanated. Deep subsoiling, in one kind of subsoil, may be very beneficial. In another kind of subsoil the same kind of subsoiling might prove deleterious. The kind of preparation that is well adapted to one kind of surface soil, may be detrimental to another kind. The kind of crop that would grow most luxuriantly on a sandy loam soil, may not be adapted to stiff clay lands. Thus it is in all given theories in reference to the mode of preparing the soil, cultivating of crops, the manner of applying fertilizers, etc., etc., very important, in

order that the readers of such theory may be enabled, from the reading of the same to put them into practical operation with a certainty of success, to give the character of the surface and subsoil, and their component parts.

H. W. LONG.

Cotton Plant, Florida, July, 1870.

Lime as a Manure.

Lime is applied to land in three different states—as quick-lime, slacked lime, and mild or air-slacked lime. To cold, stiff, newly drained land, especially if there exist in it much of acid organic compounds, it is best to apply quick-lime or caustic hydrate, (slacked lime,) as it will have a more energetic effect in ameliorating it. On light soils mild or air-slacked lime is considered most beneficial. It is best to apply lime frequently and in small quantities, so as to keep it near the surface and always active.

Lime is an essential ingredient in soil, being constantly needed by the plants in all their parts. It may always be added with profit wherever it does not already exist in sufficient quantity, but the benefit or increase of crops by liming, depends very much on the amount of organic and inorganic matter in the soil, with which lime combines, or forms soluble compounds. On light soil deficient in humus, lime often has but little effect, unless vegetable matter be added at the same time, by plowing in green crops or otherwise.

From forty to fifty bushels of lime to the acre, in our hot climate, may be considered an average application. More may be applied on very strong soil and less on light land.

Often excellent results follow a first application of lime, but future dressings fail to have the same effects. In these cases, green crops should be plowed in and other manures used, when lime may again be applied with profit.

A Suggestive Incident.

Some years ago, John Johnson, of Geneva, N. Y., made the following statement:

"A few years ago I had some eight hundred oak and black walnut stumps pulled; many of them brought up earth from four to six feet deep, and from ten to seventeen feet square on the surface. The first year after the stumps were pulled I put the field in wheat. Where the stumps stood the wheat was not so good as the other part of the field, but it is again in wheat now, and I never saw any such wheat as is on the places where the stumps were pulled. You can see where every stump had been; the wheat is all of ten inches taller, stands far stockier on the ground, and looks as if a load of barn-yard manure had been laid down and not half spread, and wheat sown on it; the straw is stiff and bright."

This is an indication of what deep plowing—turning up a portion of the subsoil will do *on lands which have an enriching subsoil.*

Remedy for Rust in Wheat.

A distinguished German agriculturist publishes in a Bremen paper the following recipe for preventing rust in wheat. Its value may be easily tested:

"Some hours, at the longest six or eight, before sowing, prepare a steep of three measures of powdered quick-lime and ten measures of cattle urine. Pour two quarts of this upon a peck of wheat, stir with a spade until every kernel is covered white with it. By using wheat so prepared, rust of every kind will be avoided. I have often noticed while in the neighboring fields, a great part of the crop is affected by rust, in mine, lying close by it, not a single ear so affected could be found."

The same writer says, he takes the wheat sheaves and beats off the ripest kernels with a stick, and uses the grain thus obtained for seed.

Department of Horticulture and Rural Art.

The Mangosteen.

Travellers who have made themselves familiar with the choicest productions of all countries and climates, have pronounced the Mangosteen the best of all known fruits The tree is a native of the Molucca Islands and the Malayan Peninsula, where it grows to the height of twenty feet or more. The fruit is spherical in form and of the size of a small orange, and resembles a pomegranate in color. Its succulent rind is nearly a quarter of an inch in thickness, containing a very powerful astringent juice, and, in wet weather, exuding a yellow gum, which is a variety of Gamboge. On removing the rind, its esculent substance appears in the form of a juicy pulp, having the whiteness and solubility of snow, and a refreshing, delicate, delicious flavor; this is the pulp of the cells, and these separate easily from each other, like the cells or lobes of an orange. Dr. Abel, speaking of the fruits of Batavia, says:

"To define it by precise language would be difficult. We were all anxious to carry away with us some precise expression of its qualities; but, after satisfying ourselves that it partook of the compound taste of the pineapple and peach, we were obliged to confess that it had many other equally good, but utterly inexpressible, flavors. From its perfect wholesomeness, it may be eaten in any quantity; and, as it possesses no luscious qualities, it does not soon cloy the palate. It is not a little singular that a plant nearly allied to the Gamboge, should yield so wholesome a fruit. The rind is astringent, and employed in cases of dysentery, and the bark of the wood is used as a dye."

The fruiting of the Mangosteen tree in the plant-house of the Duke of Northumberland, at Syon House, some years ago, was esteemed a great

triumph of horticultural art. We have, within the limits of the United States, (with Cuba and San Domingo left out,) an extensive region where, no doubt, this best of all fruits can be grown in the open air. We refer to South Florida, below the frost line. Can any reader tell us of any experiments with it in that country?

It may be propagated either from seeds or from cuttings, but the seeds do not long retain their vitality, unless excluded from the air by a covering of wax or otherwise.

Some of Dr. Wylie's Hybrid Grapes.

We are permitted to give the following letter to our readers, and are sure that it will be read with interest by pomologists and botanists throughout the country, and that all will join us in thanking Mr. Ravenel, for thus calling attention to the well-earned successes of an experimenter, as modest as he is deserving.

Mr. D. H. Jacques, Editor of The Rural Carolinian:

I send you for examination, eight varieties of Dr. Wylie's Hybrid Grapes. They are from vines kindly sent to me by him a few years ago, and now fruiting for the first time. Being the first year of bearing, the bunches are not large, but they will exhibit the quality of the fruit. I also add leaves of each kind, that the characters may be more distinctly seen. As these grapes have not yet been introduced to the public, nor received names from the propagator, I distinguish them by the numbers as they stand in my own collection, and give you the formula of their parentage as received from Dr. Wylie. A few words of explanation are necessary.

Dr. Wylie has been engaged in hybridizing the grape since 1859. He has crossed several kinds of native grape with the foreign, and also native with native. The progeny of each cross (being of precisely the same parentage) are numbered consecutively 1, 2, 3, etc. Since his first hybrids have come into bearing, he has been using them in many cases to hybridize with; either on other hybrids or on native grapes. In designating any of his varieties, therefore, it is necessary to give a formula of the parentage, and then the number of that cross. This is the only mode of distinguishing the different varieties until they have been fully tested, and names given to those worthy to be retained in cultivation.

No. 2—is the product of a cross made in 1860 by hybridizing the Foreign grape upon Halifax, (a native,) the formula of which would read thus:

Female, Halifax; Male, Foreign, No. 1, 1860.

No. 3—F., Delaware; M., Foreign, No. 8, 1859.

No. 4—F., Halifax; M. Delaware, No. 18, 1862.

No. 6—F., Syrian; M., Hybrid Scuppernong, No. 1, 1861.

Dr. Wylie hybridized the Scuppernong with other grapes, but in every case the seedlings proved staminate, (infertile.) He then used the staminate or infertile Hybrid with the Syrian, as by the above formula, and was successful in producing this fertile variety.

No. 8—F., Halifax; M. Delaware, No. 38, 1862.

NOTE.—"No. 8" in this, and "No. 1" in the previous formula, refer to Dr. Wylie's numbering of the seedlings he has raised of each cross, as explained above.

The leaves of this variety show the character of Halifax, whilst the fruit resembles Delaware.

No. 10—F., Clinton; M., Foreign, No. 1, 1860.

This is a remarkable variety, foliage and fruit both resembling the foreign. It is the earliest grape I have seen, some of the berries beginning to change color on June 25th. The bunches are large and compact; berries large, round, and dull red; flesh firm, well-flavored and melting. This season the berries ripened irregularly, (as with Isabella,) and there was some decay in the ripened fruit. Should this be only accidental, or caused by the long and very hot weather in July, this grape would at once be classed as first-rate. The specimens sent being the best bunches on the vine, are small and much below the average size. Dr. Wylie has distributed it as *Clinton Hybrid*, No. 1. With his permission, I propose to dedicate it to the fair hybridizer, who has assisted her father through all his labors with hands and heart in the nice manipulations necessary to success, and call it the "Janie Wylie."

No. 11—F., Halifax; M., Black Hamburg, No. 11, 1862.

No. 24—F., Halifax Hybrid, No. 1; M., Bland's Madeira Hybrid, No. 1, 1863.

This last, as will be seen by the formula, is a variety produced by crossing two hybrid varieties.

I have several others, but they are not fruiting this season.

The white grape (marked A) is a seedling of my own raising, from seeds hybridized by Dr. Wylie, and sent to me in 1861. It bore a few small bunches last summer for the first time, and they were fully ripe about the middle of August. The quality was very superior. The bunches now sent have not reached maturity, and therefore not as good as they will be two weeks hence.

Dr. Wylie's labors in hybridizing the grape, are worthy of a more extended notice. Besides the improvement they promise in the quality of the grape, and the great benefit to vine culture, his experiments in a very interesting field of vegetable physiology, possess a scientific value. It is to be hoped that he has preserved his notes, and will, at some time, prepare a digested analysis and result of these investigations for publication.

H. W. RAVENEL.

Aiken, S. C., August 2d, 1870.

We believe that Dr. A. P. Wylie, of Chester, S. C., is not only the most careful, scientific and successful hybridizer of the grape in this country, but that he is the only man who has produced a true hybrid with well marked foreign characteristics by crossing native and foreign species. All the other so-called hybrids with which we are acquainted, though some of them are excellent grapes, are unmistakably native in all their prominent qualities. Dr. Wylie has obtained several hybrids that rival the best foreign grapes *in their own particular kind of excellence.* His Clinton Hybrid, No. 1, (No. 10 in the foregoing classification,) is an example. Whether it shall prove in every way successful or not, it furnishes an encouraging indication of progress. It is certainly a remarkable grape, and full of promise.

No. 2 is a small black grape, of peculiar but excellent flavor. No. 3 is a red grape, also of small size. It is exceedingly sweet and rich, and we think superior to the Delaware, which it resembles.

No. 6 interests us more than any other variety on the list, though, so far as we can judge by the specimen before us, inferior to some of the others. It is a triumph of science and art over natural difficulties that were supposed

to be insurmountable. It has its red berries in clusters like the Scuppernong, (though the berries are more numerous,) while it has also distinct traces of its foreign blood. We hope much for future hybrids of its class. The berries ripen in succession, like the Scuppernong, and some of them on the clusters sent had commenced to ferment or decay, which mystified us a little while tasting them, but the true flavor seems to be fine, high, rich, and somewhat musky.

Nos. 8, 10, and 24 strike us as being remarkably promising varieties. No. 8 resembles the Delaware. Of No. 10 we have already spoken. No. 24 is a fine red grape of medium size, very sweet, and of a fine, rich, delicate flavor. The bunch before us is small and compact; but this being the first bearing year of the vine, there will doubtless be improvement in the size of both berry and bunch.

The white grape, marked "A," seems to be promising, but the specimen sent not being fully ripened fails to properly represent the quality.

We have several of Dr. Wylie's hybrids on our own grounds, and hope to report upon them when they come into bearing.—Ed.

On Apples Spotting.

This is a subject of such importance to the South (particularly at the present time, when the interest in growing fine fruits is extending so generally) that a thorough discussion of it is warranted.

Many have become so disheartened by their repeated failures to grow good winter-keeping apples, that they are disposed to abandon the attempt.

In Tennessee, soon after the cane had disappeared, apples were raised so abundantly that they could not be sold for fifty cents per bushel at the close of the winter. Now they buy most of their late apples.

In the Western States, some years ago, apples were just as abundant. Now, late in winter, their markets are supplied from the North and East. As far South as Mississippi, Alabama and Georgia, it is difficult to keep apples all winter.

There must be some natural cause for this failure over so large an extent of our country; and if we can determine wherein the difficulty lies, we may perhaps all have apples in plenty again. Such a prize is worth an united effort by all our intelligent pomologists.

Middle Tennessee is generally a hilly, rocky country, and formerly had an abundance of vegetable matter. The land was very rich and productive, and sufficiently porous to be naturally drained, having an excellent subsoil. At that time apples were abundant, but, as the soil became worn and more compact, they began to fail, though the soil is still heavily charged with the carbonate of lime from the abundant rocks.

While the Western States were new, and there was abundant vegetable matter in the soil, which was then porous, there was no difficulty in raising apples. Their failure now is regarded as a crying evil.

Good winter apples are still abundant in the mountainous region of East Tennessee, North Carolina, and even on the Bear Creeks in North Alabama. If they had not formerly been successfully raised on the more level lands, it would seem the more elevated country only could successfully grow them.

With us in Mississippi, and I think it is the same in other sections, our orchards bring the first full crop to fine perfection, and every year after the winter apples spot more and more, until, with a few exceptions, they become worthless.

Our early apples—the Astrachan, Early Harvest and the different June apples—still bear in fine perfection, even on old trees; also some green apples, the Russets and a few others, mature for winter keeping.

This is nearly as much as the Western States and Tennessee can claim, except in some special localities. However, as their seasons are shorter, their general crop keeps later, many maturing for early winter use, which fail further South. So far as my information extends, these are the facts, though we all dislike to admit them.

While so many intelligent pomologists, both North and South, have for years been studying this subject, it seems presumptive in me to try to unravel the causes and remove the difficulties, but its importance to our whole country is such that I will throw what light I can on it, hoping that others of more intelligence and practical observation will respond, and we can have apples plenty all winter again. W. B. WILKES.

Aberdeen, Miss., July 5, 1870.

[Mr. Wilkes is an intelligent and most zealous pomologist, who has made the subject here broached a special study, and we are happy to inform our readers that we have the promise of several more articles in continuation of it.—Ed.]

Vegetables--Experience with New Varieties.

Little Pixie Cabbage.

Cabbages.—Last winter, we received from Jas. J. H. Gregory, of Marblehead, Mass., who knows more about cabbages perhaps than any other man in the country, seeds of several varieties, most of them new to this region. We did not find room to test them all properly, but can speak of the following:

1. *Early Winningstadt.*—This is not a new sort and had already been well tested by us in the South. It proved, as usual, a most reliable plant for heading. We consider it one of the best for the private garden, espe-

cially where it is found difficult to make cabbages head. Not quite so early as Early Ox-heart and Early York.

2. *Improved American Savoy.*—This was planted late for our climate. It seemed promising, but was destroyed by worms. We shall give it a fairer trial next time.

3. *Little Pixie.*—Little Pixie is a gem. If you want large heads this will not suit, but for earliness, tenderness and sweetness, give us this little, quick growing sort. No kind we have ever tried has made heads in so short a time from the seed. The heads are very small, but you may plant close and get a large number of them on a small space.

4. *Early Ulm Savoy.*—This is also a small and very early cabbage, and superior to the foregoing in quality, but in our experiment did not head quite so uniformly. We shall give it another trial.

From Edward J. Evans & Co., York, Pa., we received—

5. *Early Dwarf Flat Dutch.*—It is an excellent cabbage, heading uniformly and well, and though called a dwarf made good-sized heads. It seems to be a promising sort for our climate.

The Agricultural Department, Washington, D. C., sent us, among other valuable varieties—

6. *Early Jersey Wakefield.*—This is not a new variety, but is excellent, and worthy of a wider distribution than it has yet obtained. It is the standard market cabbage in the neighborhood of New York.

Beets.—From Edward J. Evans & Co., The Department of Agriculture, and other sources, we received several varieties of Beet for trial, and tested the following:

Simon's Early Turnip.—A flat smooth variety, somewhat darker than the Bassano but not quite so early; *Henderson's Pineapple*, which is handsome and good but not early; and *Castlenaudary*, a French variety of great excellence, very dark, sweet and tender.

Kohl Rabi.—We like the Kohl Rabi much, and tried this season the new *Neapolitan Curled.* It has a very beautiful dark curled foliage, but proved with us entirely worthless. *Early White Vienna*, is excellent and never fails.

Egg Plant.—Of the Egg Plant or Guinea Squash, we received from the Department of Agriculture a package marked *Black Pekin*, which proves to be a new and very distinct variety of great promise. The plant grows much more rapidly than any of the old sorts; has very dark purple stems, approaching to black, very dark leaves, and globular, dark purple fruit of the best quality. It has proved much more prolific than the *Long Purple*, which grew side by side with it.

Radishes.—Of the Radish, we have tried almost every variety known, but find none so good as the *White Tipped French Breakfast Radish.* The *Edible Podded Radish*, (*Raphanus Candatus,*) is curious, but we do not deem it particularly desirable.

On other vegetables tested during the present season, we will report at another time.

Strawberries and Raspberries.

I. STRAWBERRIES.

Our experience this season has been with beds planted last fall, and is not, therefore, conclusive in every respect. It is, however, not without its value, and our readers shall have the benefit of whatever we have learned.

Wilson's Albany.—The Wilson has proved itself worthy of its reputation for beauty, size, and bearing qualities. It is not a favorite with us for home use, but in market size and color are more in request than flavor, and it always sells well.

Longworth's Prolific.—This is an earlier and better berry than the Wilson, and this season produced more fruit and of larger size; but our plants were of Southern growth and remarkably strong, while the Wilsons were sent us from New Jersey, and were not so well rooted. Longworth's Prolific is a standard sort for the South.

Triomph de Gand.—Our plants of this variety bore finely, for the first season, and continued longer in bearing than either of the foregoing. In good, strong, rich soil and with careful culture, it is one of the most satisfactory of all our well-tried kinds. The fruit is better and larger than the Wilson, but more tender. The plants withstand our hot summers perfectly.

Trollope's Victoria.—Our experience heretofore with this variety has been very satisfactory, but this year our plants failed to make a good growth, and gave us very little fruit. We hope to be able to report more favorably next season.

Nicanor.—We had but few plants of Nicanor, and gave them a good place, but they have not, thus far, met our expectations. The berries were numerous but small, and the plants did not make a very good growth. They are now looking better, seeming to endure the heat and drouth well. The quality of the fruit seemed to us to be only fair.

Jucunda.—This is a perfect failure, as we have always found it in this climate.

Barnes' Mammoth.—This new variety grew finely during the winter and spring, and gave us some berries of immense size and good quality, but it has not withstood the heat and drouth very well, many of the plants having died out. Its situation in the garden is not favorable, however, and we shall hope for better results on removal to a better place. If the plant should prove able to sustain itself through our long dry summers, it may be set down as a great acquisition.

Seth Boyden.—Boyden's No. 30, now generally called Seth Boyden, is another promising new variety. We got a few large handsome berries of superior quality, but the plants have mostly succumbed to the heat and drouth. Their location is similar to that of Barnes' Mammoth, and we shall try them again in a better place before deciding against the variety.

Charles Downing.—This new variety proves, so far, very promising indeed. The berries are very large, regular, dark scarlet, sweet, juicy, and fine fla-

vored. The plants are vigorous, and have suffered less from heat and drouth than any other variety on our grounds. Of their productiveness, the first season does not enable us to speak confidently, but their promise is good in this respect.

Monthly Red Alpine.—We planted this both under its proper name and as the *Mexican Everbearing*, but most of our plants disappeared during the summer. The few that are left, we have transplanted to a moist and partially shaded spot where they may do better. We confess to a liking for the flavor of the Alpines, but they are poor bearers and the berries are small.

II. RASPBERRIES.

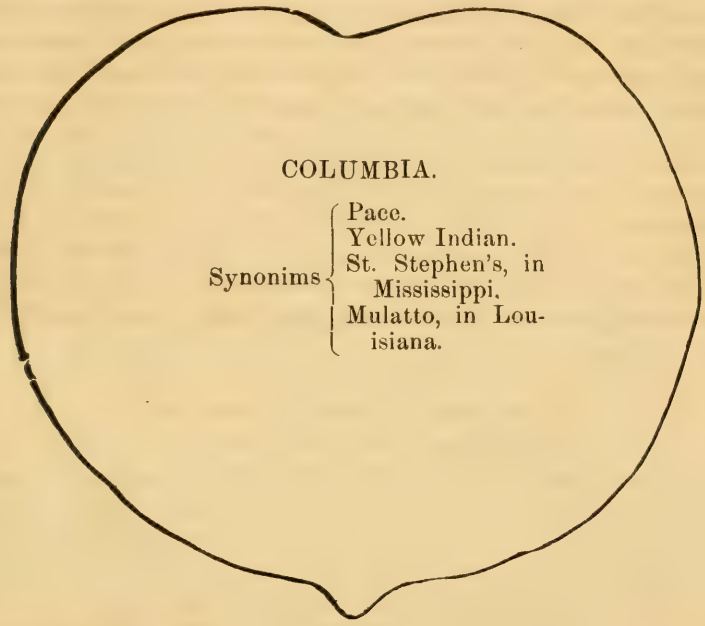
We can report on these only in regard to the first season's growth, which has been satisfactory in the case of all the varieties of Black Cap Family, and astonishing in that of the *Philadelphia*. We allowed several of the latter to fruit, (contrary to rule,) and obtained some handfuls of very fair berries. We expect much from the Philadelphia. The *Purple Cane* has grown fairly.

Southern Fruits—Peaches.

Large, oblong, with a blunt protuberance; skin, white, nearly covered with carmine, and pencilled deeper carmine; flesh, white, exceedingly juicy, melting, vinous, and well flavored; freestone; season of maturity from July 1st to July 15th; flowers small; glands uniform. Its thin skin prevents this magnificent fruit from withstanding carriage to distant markets, and is

consequently unfit as a shipping fruit. For home consumption and home markets, it stands unrivalled at its season of maturity.

This variety originated in Orangeburg District, S. C., and was produced by Mr. Stroman. Its magnificent appearance and fine quality caused this variety to receive many synonims, although it is of comparatively recent origin.



Large to very large; nearly globular; suture distinct; apex sometimes very sharp, often a little depressed; skin, dingy yellow, very rough and downy, striped, washed or mottled with dull, brown, red stripes and spots; flesh, deep yellow, buttery, melting, and exceedingly rich; freestone; season of maturity from end of July to end of August; flowers small; glands uniform; young wood, purple, differing from all the other types in this respect.

The origin of this popular Southern variety is attributed to Mr. Coxe, the author of the first American work on fruit trees. This celebrated pomologist raised the variety from a stone brought from Georgia, and named it Columbia, from the county whence the stone was procured. In middle Georgia, the variety is known from time immemorial as the Pace Peach, taking its name from a person of that name, upon whose old settlement the original tree stood not over ten years since. The type to which this variety belongs is known as *Indian*, and embraces many excellent varieties, differing widely from one another—some being yellow-fleshed freestones, others white, and many deep claret-colored clingstones; all, however, bearing the distinctive mark of their race in the red stripes of the skin, which in many varieties continue through the flesh, and are visible to the stone. The peculiarity of the *Indian type*, is the faculty of reproduction by seedlings. This

is owing to the peculiar inflorescence of this type which is less liable to hybridizing than the other types of the peach family. Hence many orchards are met with that are composed entirely of *Indian peaches*, and all the trees originally produced from seed. The variety being only slightly modified either in size or shape, the main differing points being the season of maturity and quality. The variety originated by Mr. Coxe is only an instance of this tendency to almost identical reproduction of the original type.

The Columbia is an excellent peach, both for home and distant markets. Its shipping qualities are unsurpassed if equalled by any other variety, and although its advent in Northern markets is late in the season, it seldom fails to reach there in good order and to command a good price.

P. J. BERCKMANS.

Augusta, Ga.

Stock and Natural History Department.

Light Draft and Saddle Horses.*

The mule and the ox are so thoroughly adapted as beasts of burden to our Southern climate, and the character of our laborers, that the horse should be, as he generally is with us, confined in his uses to light draft and the saddle. To undertake to breed the Connestoga or other large breeds for heavy draft would scarcely prove a paying speculation to the Southern farmer; but, in the class of horses indicated, there enters beyond their necessity to a rural people the element of luxurious indulgence. So much of taste and comfort may be consulted in the style, paces, and temper of the horse devoted to one's personal use, that there are few persons whose pleasure or business requires the services of such that are not always ready to pay a large margin of difference between the horse that suits them and one with which they can just get along. Your committee are persuaded that there is in farming no more profitable adjunct to our great staples than this business properly carried out. It is to be hoped the attention of our people may be more generally directed to the subject; and, in proof of what may be done, may be cited the recent experience of two members of this society. One of these has reared from a well-bred Kentucky mare, that cost him $300, five colts, selling three of them and the mare, in her old age, with the fourth, a suckling by her side, for $1,125, and retaining for himself the choice of the lot—an animal for which $500 could be obtained to-day. We think that the services of the mare and the colts during the year or two each of them was kept after being broken in, very nearly, if not quite, repaid him for the cost of feed and atten-

*From the Report of the Committee on Stock Raising of the Barnwell Agricultural and Mechanical Society, James O. Haygood, Chairman, originally published in the *Barnwell Journal*.

tion. The other of these gentlemen has been still more successful. From one mare he has bred eight colts; of these, he has sold three for $1,050, and retains for himself five, worth at least the same amount of money.

BREED.

Your committee believe, that, under our circumstances of climate and character of roads, the horse with two or three crosses of thorough-blood is the one adapted to our use. The other cross may be the medium sized horse of common blood, either of the Southern or Western States. The experience of the late war, and the observations of your committee since, among the cavalry regiments of the United States, stationed in the South, and mounted upon the horse of common blood from the North and Northwestern States, leads them to consider these as an inferior breed for the saddle or for light draft anywhere, and not as well suited to cross the thoroughbred horse upon for our use. It is true the trotting horse of the Northern States is this very cross, but the progeny do not make the saddle horses of the other cross, and their very excellence, the speedy trot, is thrown away on our roads. In light draft, we want a horse of maximum speed, not exceeding a mile in four minutes, but one which can travel through twelve hours of a July sun, over our heavy and ill-worked roads, at an average of six miles an hour, and then go back next day. To do this the generous blood of the Arab, or his civilized descendant, the thoroughbred, must course freely through his veins.

SELECTION OF BREEDING STOCK.

We would select a half or three-quarter-bred mare for our purposes, fifteen and a half hands high, good length of body, spirited and docile, sound, thrifty, and of good style and color. This is the foundation stone of the enterprise, and economy here is fatally misplaced. If an approved brood mare, and not too old, all the better, for her qualities as a milker and nurse can only be known upon trial.

Fifteen or fifteen and a half hands for the stallion is size enough. His blood should be the best of the stud book, and distinction upon the turf is very desirable, but his achievements there should rather have been in heat races at long distances, than in short. These are all matters of grave import; but we would recommend for the purpose in view, to breed to no horse possessing them unless he possessed, in addition, the qualities of soundness with superior style and action. Temper should also be duly considered.

THE STUD FARM

May be simple enough. A paddock, containing three-fourths or less part of an acre, fenced six feet high with plank, and containing a hovel, wind and rain proof, fifteen or twenty feet square, free from all projecting points on the inside, with a door six feet wide, opening to the south, and a manger running the length of one side, instead of the usual rack and trough, should be the home of the mare from six weeks before foaling until the colt is weaned, and of the colt until he is nearly a year old. While the mare occupies it, and before she foals, the door should be kept fastened back securely, (unless bad weather makes it desirable to confine them,) that they may go in and out at

will. The wide door is to prevent a hip from being knocked down when the colt crowds in by the side of the dam; the manger is to allow the colt to feed as early as it will. The hovel, and better the whole lot, should be kept well littered, and a trough of water on one side of the paddock, filled from a well on the outside of it, is a great convenience. The necessary shade may be obtained with the China tree, as the berries are supposed to be a good vermifuge and tonic. At any rate, we have never known harm to result from horses eating them freely. A lot of rye or wheat for winter grazing is very necessary. A lot of Rescue grass and Lucerne will give green food in spring from the time the rye fails till the natural summer grasses come in, and millet supplies abundant green food for soiling from June till frost. The staple crops of Indian corn, blades, and oats from the farm will do the rest. In exceptional cases of ill health or death of dam we have known the foal to thrive and do well on cows' milk.

The mare may be used lightly during all her time of breeding service. She must be abundantly fed. It is best to leave the colt in the paddock when the mare is in use. It must be forced in its growth for the first twelve months, and weaned at five or six months of age. In the second year the colt may be allowed to get somewhat thinner, but by no means poor. No necessity for grooming till two years old, but the growth and formation of the hoof should be looked to as often as once in three weeks, and by pairing and rasping redundancies a properly shaped hoof and open heel secured.

CASTRATION.

Castrate after twelve months of age and at any period of the year, fixing the time by the development of the colt. Without discussing the various methods, we proceed briefly to describe the mode of performing this operation we have found best. Do not throw the colt, but *lay him down*, by Rarey's method, on his right side. Flex both forelegs upon the arm, and secure them by straps. Place a folded blanket under his head. Let the hind legs remain unfettered. An assistant places his right knee on the blanket against the back of the colt's head, his left knee lightly on the neck; with his left hand he takes hold of the nose band of the halter and elevates the muzzle five or six inches from the ground, and retains it firmly in this position; with his right hand he keeps the head down on the blanket. It is impossible, while this is done, for the colt to rise or struggle to rise. The operator stands at the back with his left foot on the end of the tail. He now bends over and takes firmly in his left hand the right or lower testicle, and with one stroke of the knife he frees it from the scrotum. The clamp is now applied high up, the cord severed, a hot iron applied to the end, and the clamp removed. The other testicle is proceeded with in the same way, the colt unloosed and allowed to get up. He should now be turned into his paddock and allowed to take such exercise as he pleases in the small enclosure, but never be forced to it. On the third day after the operation the tender and inflamed parts should be gently bathed with warm water and castile soap, and this repeated every day afterwards until he is well. The incisions must

be kept open until suppuration is established by gently pressing a greased finger back and forth in them once a day. If the weather be cold the colt should have a blanket. If in the fly season, the following ointment will effectually keep these pests from the inflamed parts: Take fresh elder leaves, half pound; lard, half pound; boil in the lard till the leaves become friable, then strain through linen. When cold, it is fit for use.

BREAKING.

This is the most critical period in our progress, especially when it is desired to turn out a first-class saddle horse—the *acme* of equine perfection. The trick of bridle breaking, a callous mouth, or any of the numerous petty but annoying faults so easily acquired now, and so hard to cure, may mar the most flattering prospect, and spoil for this purpose the most promising colt.

The foal should have been handled and rendered familiar and friendly with its groom from the day it was foaled. Shutting it up in the hovel with its dam, a little persistent patience will cause it to submit to be handled, and afterwards, daily, when the dam is groomed, the colt should be wisped over with a soft cloth or brush, and its legs handled to secure its gentleness. It soon will become as attached to and playful with its groom as any other pet. Before weaning it should be halter broke. The headstall, without the strap, should be put on and off with the greatest care and gentleness several days before attempting to lead it. When it is to receive this lesson the strap should be run through the ring without making fast, and both ends held in the hand. Should the colt then get away no harm can result from tangling the strap around its legs. An assistant should lead the dam ahead of the colt, and the lesson will soon, and without trouble, be acquired.

At rising three its education should commence in earnest, and the colt broken to the saddle, and, perhaps, also to harness. Your committee, however, deem it preferable for the colt to be used under the saddle until it is a year older, and then broken to harness. Boys should not be allowed to ride it in this time, except under the eye of an older person. They will learn it as many tricks as a monkey. The best use it can be put to to earn its feed, during its third year, is to be ridden by a light man, with a smooth snaffle bit and an easy fitting saddle, in some light work daily, such as overseeing a farm, or something similar.

Important as is this branch of the subject, your committee are warned by the length to which their report has run itself not to enter into details. They feel warranted, however, from considerable experience, in recommending to the young breeder the adoption of Rarey's system of horse breaking in its principles and details. It is exhaustive of the subject so far as securing obedience and docility are concerned; and, however gentle the colt may be, we would omit none of the details. Heretofore the colt's education has made him a playful companion, with something of that deficiency of respect for his master which familiarity breeds. A couple of days' manipulation by Rarey's method will, without harshness, give him an idea of his master near

akin in affectionate submission to that master's feeling towards an irresistible but kind Providence; and this relation will continue until the master shakes the poor brute's faith by unkindness, timidity or passionate caprice.

In conclusion, your committee do not wish to be misunderstood in the recommendation to their fellow-citizens to embark in this branch of stock raising. It would, in their estimation, be as foolish in the planter of this region to embark in it, to the exclusion of cotton and our other valuable staples, as it would be in a Kentuckian of the blue-grass region to turn up his sward for cotton. One or two mares will supply most of us in a short time with saddle and light-draft horses for our own use, and then annually one or two to sell. It is very easy on a cotton plantation to get overstocked with colts. If a man's taste and surroundings permit him to go further into horse raising, his attention should be directed to breeding a sufficient number of mules to keep up his plantation teams. We believe in this, as everything else, it is our true financial policy to make the plantation, as far as possible, self-sustaining, and that the cotton crop should be nearly, if not quite, the exponent of profit.

Cotton Seed Meal for Stock.

We desire to give our readers the results of actual experience in the use of cotton seed in various forms as food for stock—both cattle and horses. The testimony of chemists is decided and emphatic in its favor. Has experience confirmed the deductions of science? In what way and in what quantities should it be fed? Is it necessary to mix it with corn meal or other food? Will those who have had experience please let us hear from them? In the meantime we find in an exchange a report of the use of cotton seed meal for milch cows, in which the writer says:

Mr. Mory showed me cows that would give as high as twenty-four quarts at their best, that are now giving from twelve to sixteen quarts, and are coming in this summer and fall. He says it takes him one year or more after he buys a cow, to bring her up to her full capacity. He raises no calves, but prefers to buy cows, as he sells all his milk.

In summer he feeds, in addition to pasture feed, two quarts of cotton seed meal. In winter four quarts cotton seed and from two to four of Indian meal per day, with English and swale-hay.

Mr. Andrew Belcher keeps about the same number of cows, and feeds much in the same manner. They both think very highly of cotton seed meal for feed. Mr. Belcher was formerly cautious in the use of it. Now he buys a cow and immediately puts her on a full feed of cotton seed and meal.

He bought a cow last spring for seventy dollars, that was claimed by the owner to give twelve quarts. He now milks eighteen quarts from her daily.

Mr. Mory says if he is out of cotton seed one day, his cows will shrink a quart each, and neither Indian meal nor wheat shorts will keep them up to their quantity, but after feeding cotton seed again one day, they will come up again to their full rate.

The Houdan Fowl.

This is a French fowl, lately introduced into this country. It differs from the Crève-Cœur in plumage and head dress, but resembles it in some of its characteristics. It is a handsome bird, a good layer, and noted for the excellent quality of its flesh. For table fowls the Houdans are hardly excelled. There are three breeds considered "tip top" in the Paris markets: the Crève-Cœur, the Houdan and La Fleche.

Cabbage Insects.

Among the most annoying pests of the garden and truck farm are the cabbage worms. These worms are the caterpillars of a group of butterflies known to many farmers as "Garden Whites." Harris describes them as follows:

"The wings are generally white, with inconspicuous black markings, and occasionally with green or yellow underneath; they are very broad and have no scallops or indentations in the margin; the hind wings in outline resemble an egg. 'The feelers (palpi) are rather slender, but project beyond the head; the antennæ have a short flattened knob. Their flight is lazy and lumbering. The caterpillars are nearly cylindrical, taper a little towards each end, and are sparingly clothed with short down, which requires a microscope to be distinctly seen. They suspend themselves by the tail and a transverse loop, and their chrysalids are angular at the side and pointed at both ends.'"

We condense from that excellent and most useful journal, *The American Entomologist and Botanist*, the following description and illustrations:

The first species we shall mention is the Rape Butterfly (*Pieris rapæ*, Schrank, Fig. 1.) This insect has been the occasion of some little speculation and great interest to our New England and Canadian entomologists, inasmuch as it has been introduced to this country from England, and is probably one of the most perfect instances on record of any insect being imported from one country to another, and becoming completely naturalized in its new quarters.

Fig. 1.—Colors—Black and White.

Now let us look at the larva (Fig. 2, *a*) and its habits. It is one and one-half inches long; pale green, finely dotted with black; a yellow stripe down the back, and a row of yellow spots along each side in a line with the breathing holes. In England, and around Quebec, it has done immense damage to the cabbages and other Cruciferæ (*Cress* family) by boring into the very heart of the plant, instead of being content with the less valuable outer portion, as some other species are. On this account the French call it the "Ver du Cœur," or Heartworm. When about to transform, it leaves the plants on which it has been living, and fastens itself on the underside of some stone, plank, or fence-rail, where it changes into a chrysalis in the middle or latter part of September, and in this stage it hybernates, producing, in New England at least, the perfect insect early in April. The chrysalis or pupa, (Fig. 2, *b*) is variable in color, being sometimes yellowish-brown or yellow, and passing thence into green, speckled with minute black dots. The brood of butterflies that emerges from pupa state in the spring lays eggs shortly afterwards, and these eggs produce caterpillars, which in their turn change to chrysalids in June, and in seven or eight days more the butterfly appears; which again lays its eggs for the second brood, which, as before stated, hybernates in the pupa state.

Fig. 2.—Colors—(*a*) pale green; (*b*) yellowish-brown.

In the perfect butterfly the body and head are black and the wings white,

marked with black, as follows: In the female (Fig. 1) a small space at the tip and three spots on the outer half of the front wings and one spot on the hind wings; beneath one spot on the front wings, but none on the hind wings, which are commonly yellowish, sometimes passing into green. The male (Fig 3.) has only one spot above and two beneath on the front wings, and a black dash on the anterior edge of the hind wings. There is a variety of the latter sex which has the same markings, but differs from the type in the ground color being canary yellow. Curiously enough, this variety has been taken both in this country and in England.

Fig. 3.—Colors—Black and White.

The Potherb Butterfly (*Pieris oleracea*, Boisd, Fig. 4,) is the next species to be described. It has a very wide range, reaching rarely as far south as Pennsylvania, extending eastward to Nova Scotia, and at least as far west as Lake Superior, while in the north it is found as high up as the Great Slave Lake in the Hudson's Bay Company's territory. This butterfly has a black body; the front wings are white, marked above with black at the base, along the front edge, and at the tip; the hind wings are white above and lemon-yellow beneath, but without markings, except a few black scales at the base.

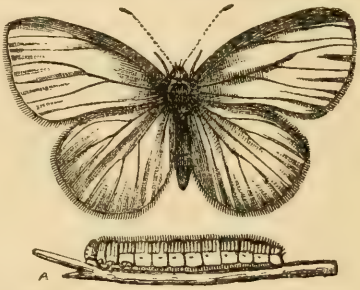


Fig. 4.—Colors—Black and white; (*a*) green.

About the last of May numerous specimens of this species may be seen over cabbage, radish, or turnip beds, or patches of mustard, where, on the underside of the leaves, it deposits its eggs. These are yellowish, nearly pear-shaped, longitudinally ribbed, and one-fifteenth of an inch in diameter, and are laid seldom more than two or three together. In a week or ten days the young caterpillars are hatched; in three weeks more they have attained their full growth, which is an inch and one-half long. Being slender and green (see Fig. 4, *a*) they are not readily distinguished from the leaves on which they live. They taper a little toward each end, and are densely covered with hairs. They begin to eat indiscriminately on any part of the leaf. When they have completed the feeding stage they quit the plants and retire beneath palings, etc., where they spin a little tuft of silk, entangle their hindmost feet in it, and then proceed to form a loop to sustain the front part of the body in a horizontal or vertical position. Bending its head on one side the caterpillar fastens to the surface, beneath the middle of its body, a silken thread, which it carries across its back and secures on the other side, and repeats this operation until a band, or loop, of sufficient strength is formed. On the next day it casts off the caterpillar skin and becomes a chrysalis (Fig.

5.) This is of a pale green, and sometimes of a white color, regularly and finely dotted with black; the sides of the body are angular, the head is surmounted by a conical tubercle, and over the forepart of the body, corresponding to the thorax of the included butterfly, is a thin projection, having in profile some resemblance to a Roman nose. The insect remains in this stage for ten or twelve days, when the butterfly appears.

Fig. 5.—Colors—Green, white, and black.

In the last of July and first of August, these insects may be seen in large numbers depositing their eggs for a second brood, which wintering in the pupa state, produces the perfect insect the following May.

By taking advantage of the habits of these insects, they might be nearly exterminated. If boards are placed among the infested plants, about two inches above the ground, the caterpillars when about to change will resort to them, and there undergo their metamorphoses. They may then be collected by hand on the underside of the boards and destroyed. As the butterflies are slow fliers, they may be taken in a net and killed. A short handle, perhaps four feet long, with a wire hoop and bag-net of muslin or mosquito netting, are all that are required to make this useful implement, the total cost of which need not be more than fifty or seventy-five cents. The titmouse is said to eat the larvæ, and should therefore be protected and encouraged.

Fig. 6.—Color—Black and white.

As the Southern representative of the genus, we will briefly add an illustrated account of the Southern Cabbage Butterfly, (*Pieris protodice*, Boisd.) Mr. S. H. Scudder, from an examination of a large number of specimens, found that this butterfly enjoys a wide geographical range, "extending from Texas on the southwest, Missouri on the west, and the mouth of the Red River of the north on the northwest, as far as Connecticut, and the Southern Atlantic States on the east." But while the species is scarce in the more Northern States, it abounds in many of the Southern States, where it takes the place of the species described in the above paper. It often proves exceedingly injurious, and we learn from one of our Mississippi exchanges that "there were last year thousands of dollars' worth of cabbages devastated and ruined by worms in the neighborhood of Corinth." We are furthermore told that cabbages could not in consequence be had there even at ten cents per head. The "worm" referred to was doubtless the species under consideration. It abounds in many parts of Missouri, and especially in the truck gardens around large cities, where it proves quite destructive to the cabbages.

Fig. 7.—Color—(*a*) Greenish-blue, yellow and black; (*b*) light bluish-gray.

The larva (Fig. 7, *a*) may be summarily described as a soft worm, of a greenish-blue color, with four longitudinal yellow stripes, and covered with black dots. When newly hatched it is of a uniform orange color, with a black head, but it becomes dull brown before the first moult, though the longitudinal stripes and black spots are only visible after said moult has taken place.

The chrysalis (Fig. 7, *b*) averages 0.65 inches in length, and is as variable, in depth of ground color as the larva. The general color is light bluish-gray, more or less intensely speckled with black, with the ridges and prominences edged with buff or with flesh-color, and having large black dots.

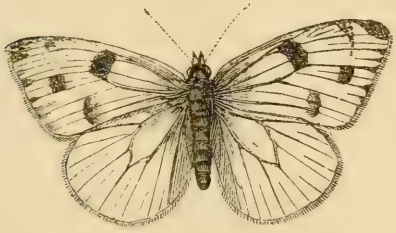


Fig. 8.—Color—Black and white.

The female butterfly, (Fig. 6,) as was stated, differs remarkably from the male, which we represent at Fig. 8. It will be seen, upon comparing these figures, that the female is altogether darker than the male. This sexual difference in the appearance is purely colorational, however, and there should not be the difference in the form of the wings which the two figures would indicate, for the hind wings in our male cut are altogether too short and rounded.

This insect may be found in all its different stages through the months of July, August and September. It hybernates in the chrysalis state. We do not know that it feeds on anything but cabbage; but we once found a male chrysalis fastened to a stalk of the common nettle, (*Solanum carolinese,*) which was growing in a cemetery with no cabbages within at least a quarter of a mile. Before concluding this article, we cannot too strongly urge upon our Western readers to do all in their power to prevent the advent of the Rape Butterfly in their midst. It is more to be dreaded than any of the others, and by stringent measures may easily be prevented from gaining a foothold in any locality. Be on your guard!

Fig. 9.—Color—Shining black and bright yellow.

Figure 9 is the Harlequin Cabbage-bug, (*Strachia histrionica,* Hahn,) so called from the gay theatrical harlequin-like manner in which the black and yellow colors are arranged upon its body. The first account of the operations of this very pretty but unfortunately very mischievous bug, appeared in the year 1866, from the able pen of Dr. Gideon Lincecum, of

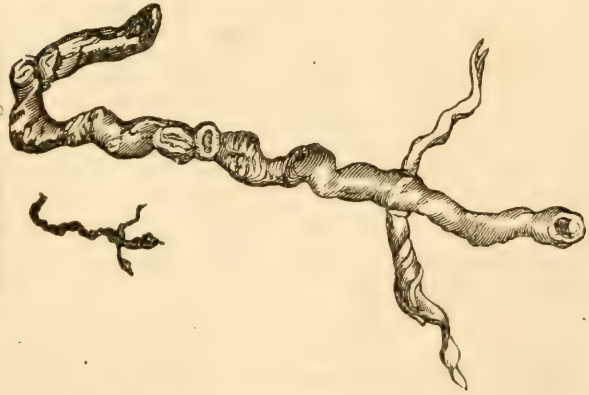
Washington County, Texas, and were printed in the *Practical Entomologist*, (vol. I, p. 110.) He says:

"The perfect insect lives through the winter, and is ready to deposit its eggs as early as the 15th of March, or sooner, if it finds any cruciform plant large enough. They set their eggs on end in two rows, cemented together, mostly on the underside of the leaf, and generally from eleven to twelve in number. In about six days in April—four days in July—there hatches out from these eggs a brood of larvæ resembling the perfect insect, except in having no wings. This brood immediately begins the work of destruction by piercing and sucking the life sap from the leaves; and in twelve days they have matured. They are timid, and will run off and hide behind the first leaf-stem, or any part of the plant that will answer the purpose. The leaf that they puncture immediately wilts, like the effects of poison, and soon withers. Half a dozen grown insects will kill a cabbage in a day. They continue through the summer, and sufficient perfect insects survive the winter to ensure a full crop of them for the coming season.

"This tribe of insects do not seem liable to the attacks of any of the cannibal races, either in the egg state or at any other state. Our birds pay no attention to them, neither will the domestic fowls touch them. I have as yet found no way to get clear of them but to pick them off by hand."

Carbolic Acid for the Gapes.

A writer in the London *Field* narrates his experience with the disease in fowls generally known as the gapes or gaps, and caused by a red worm which infests the trachea. Having tried removing the worms with a feather and with the twisted hair, and found the operation troublesome and uncertain, and deeming the administration of turpentine attended with danger, he bethought himself of the extremely active influence of carbolic acid on the lower forms of animal life, and determined to try the effect of the inhalation of its vapor in the cases of gapes that came under his notice. He gives the results as follows:



The Red Worm. (Schlerostoma Syngamus.)

During the present season, I have operated three several times on chickens that were suffering severely from gapes, being almost choked by the

worms. Each bird was placed in a small deal box, the open top being covered with a cloth. I then took one of Savory's carbolic acid fumigators, which I happened to have at hand. This consists essentially of a small metal saucer, heated by a spirit lamp below. On the saucer I placed about one dozen drops of carbolic acid, lit the lamp, and put the apparatus in the interior of the box; dense white fumes soon filled the box, and, being of necessity respired by the bird, came at once into contact with the worms. The operation was continued in every case until the birds were in imminent danger of suffocation. They soon, however, recovered on exposure to the air, and on the day following the treatment were running about perfectly free from any symptom of disease. The chickens operated on are not now to be distinguished from those of the brood that were not affected.

He adds that no special apparatus is required, as any little arrangement which will serve to volatilize a few drops of the acid will answer. Putting a hot brick in a box and pouring a few drops of the acid upon it might serve the purpose.

Cashmere or Angora Goats.

At the West these goats are becoming quite numerous; many persons having flocks of pure breeds and grades of several hundred. The large number imported from Asia, has enabled breeders to furnish them at greatly reduced prices. They have proven to be very healthy, and, in many localities, very profitable. The fleece of the pure breed, and those of seven-eighths blood, sells in New York at from $1.00 to $1.50 per pound, unwashed. The flesh of the young animals is far superior to that of the kids of the common goats. RICHARD PETERS.

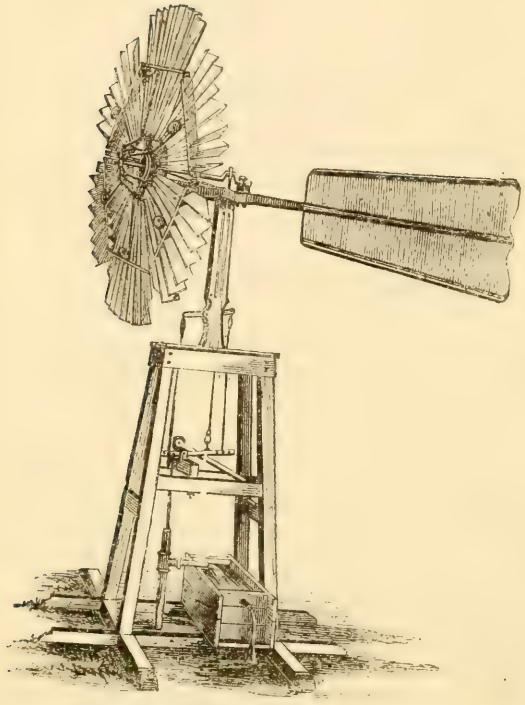
Beef Instead of Pork.

When the South sees its way clear to keeping large herds of cattle on every plantation, the hog may lose its post of honor in Southern civilization. Beef will be found as cheap and much more wholesome. Pork is too oily food for general use in a warm climate, and assists in producing many of those fearful epidemic diseases which often decimate the population of some districts.

CANCERINE.—An artificial manure called "Cancerine," is produced from the bodies of crabs, which, after being desiccated, are ground up and put in bags for sale. These animals are found along the whole Atlantic coast, but appear in unusual numbers in Delaware Bay, where, in one year, 1,200,000 were taken along about one mile of coast. Their eggs can then be shovelled up by the wagon-load. If the onslaught annually made upon them does not permanently reduce their numbers, the production of "Cancerine" can be developed to many thousands of tons annually.

Department of Mining and the Mechanic Arts.

Windmills on the Farm.



The windmill is an old-time affair, and generally supposed to be entirely superseded by the constant and more easily controlled power of the steam engine; but, as in many other cases, the advantages are found to be not all on the side of the modern invention. The steam engine is costly, and requires fuel and skilled and careful attendance. The windmill costs comparatively little, its motive power is supplied gratuitously, and it takes care of itself. Where a constant power is required, the windmill is not, of course, admissible, but there are many cases in which this is not essential, and the machine may be allowed to work or rest, as the breezes of heaven may dictate.

The windmills of old times were very different machines from the improved constructions of the present day, requiring the attention of one or more persons to keep the sails turned to the ever-changing wind, or to increase or diminish the surface of the sails according to the power of the wind; and, with all the precautions that could be taken, not unfrequently the apparatus was blown away entirely. The best windmills of the present day do not require such attendance, and are absolutely storm-proof. The one here represented—undoubtedly one of the best now made, and, perhaps, superior to all others—is the invention of Mr. A. P. Brown, and is the result of nearly twenty years study and practical test. It is claimed for it that:

1. It will head itself to the wind.

2. The wind-wheel is so constructed as to be in itself a sensitive *governor*, and is thus a self-regulator, so as always to present a surface according to the force of the wind; and while it will do its work with a very gentle breeze, it will withstand the severest gales.

3. Consequently the mill can be left to work, day and night, without attention for any length of time, except to keep the parts properly oiled.

4. The motion is steady and free from rattling noise.

5. The mill may be stopped or started in a moment, even by a child.

For railroad tanks, for watering farm stock, for grinding and cutting feed, for irrigating farms and gardens, for draining swamps and marshes, for supplying houses and grounds with water, for fountains and fish-ponds, and for other useful purposes, we are convinced that it will work well and economically.

We believe that irrigation is one of the next steps to be taken in improved agriculture, especially in the South, where the greatest drawback we have to encounter is drouth, and that windmills for raising water into ponds and reservoirs, to be thence distributed over the fields, may be made to play an important part in this grand work. In a hilly or rolling country, there will be less need of these helps; but here, in the flat coast region, they may, we think, be made to work admirably, especially as we have a strong sea-breeze during a large part of each day. Who will be the first to give irrigation a fair trial here in the way we have indicated?

The mill here described is manufactured by "the Continental Windmill Company," No. 5 College Place, New York.

Improved Implements.

To perfect Southern husbandry, our population should be trebled, a result not likely to be effected during the present generation. As a substitute, it behooves those of us who are now upon the industrial arena, to utilize most advantageously the labor that is amongst us, resting assured we have the very best possible laborers the South could desire, if properly disciplined and edified. The colored laborer knows nothing of improved implements. The old-fashioned wooden plow, the hoe, and the grain cradle, are his most effective arms for plantation work. These will sooner or later be all superseded, and our cardinal aim should be to teach the negro to use successfully all the latest and most improved implements.

Yankee ingenuity is ever endeavoring to make hard work easy, and in many instances they have succeeded by substituting machinery for manual labor. But one vital hindrance to the introduction of such machinery into the South, is the enormous cost of the implements. Every agricultural tool or implement that is patented, is sold for at least one hundred per cent. more than the cost of making. But so credulous are our Southern people, that they have only to see "*Patented*" stamped upon an implement, to be induced to buy; and after the investment is made, the implement is used just so long as it is novel and then thrown aside, because it does not relieve the laborer of all work, and like an automaton perform its duties without assistance. How many Southern farmers have, since the war, invested in patent churns,

washing machines, clothes wringers, dough grinders and the like, used them awhile, and then turned them over to the colored women, who being unaccustomed to such implements, for want of instruction, laid them aside as useless?

In many instances the intelligence of white women have prevented such losses; for instance, how many sewing machines are bought and not made to pay for themselves? And yet these very valuable and useful machines cost three times their intrinsic worth. A Willcox machine, for instance, costing sixty dollars delivered, can be built for less than twenty. The inventors,* or rather manufacturers of such machines, are in some respects public benefactors, but do they not become miserable speculators when protected by Congressional patents in their prices? I have often thought it would be no arbitrary legislation for Congress to limit the percentage of selling price over prime cost, before patenting any implement of daily use amongst the laborers of the country; not that inventive genius should be deprived of its just rights, but that extortion should be prevented.

Southern patents are no less subject to the same objections; for instance, what planter upon an examination of the Dow Law Cotton Planter could guess within one hundred per cent. of what he would have to pay for it? Or who, knowing the cost of castings and of wood-work, would price a Brinly, a Murfee, or any patent plow, at more than half the price asked for them?

These implements are bought by Southern planters because they are labor-saving, and hence economical; but, if the purchasers would only keep a correct balance sheet for and against themselves, they would find the economy of such investments a matter of question. A subsoil or turning plow is bought at an extravagant price, used in a certain field in the spring, and in all probability left where the last furrow is run until the fall plowing. It receives the same treatment in the fall; and, by the following spring, rust and decay necessitate the purchase of a new plow. True, these things are made to wear out; and, if they were not, the manufacturer would soon find his occupation gone. But how much longer would they last were they properly cared for? Throughout the entire South not one planter in twenty is prepared for sheltering from the weather such implements as the requirements of his plantation demand; much less is he prepared for housing those that economy suggests he should buy. How common it is to see upon the alluvial plantations of Louisiana, Arkansas and Mississippi from fifteen to thirty two-horse plows, and four or five heavy wagons on a single plantation, and not shed room enough on the place to ride under out of a shower of rain. On such plantations it would of course be foolish extravagance to increase the

*The Rev. F. R. Goulding, of Roswell, Georgia, was perhaps the original inventor of the sewing machine. He conceived an idea and put it in practice by making a model, which he exhibited to a shrewd Yankee school teacher in Georgia, who was about leaving for "hum" to spend his vacation. He never returned South. In the fall Mr. G. entered his caveat with the Commissioner of Patents, when, lo! his Yankee friend had already patented the machine. In a few months appeared Singer's improvement.

number of improved implements. Nature's generosity in a manner supersedes their necessity.

Not so in the older Southern States. On the Atlantic slope, where the white race should increase annually very perceptibly, and where the colored race will ever find their happiest homes, less fertile lands demand more energy and more skilled labor to produce remunerative crops; and the most valuable adjuncts to these essentials is the introduction of all kinds of improved implements. These, however, would be useless without previous preparation of the land. Stumps, roots and rocks, and all kinds of obstructions must be removed; and the labor expended in removing them is profitably spent.

A case in point: In the fall of 1867, I prepared my wheat land, as I supposed, thoroughly, by good, deep, close plowing. The winter's rains seemed to beat down the surface perfectly smooth. The promising prospect in the spring of 1868, induced the investment of a Buckeye, Jr., Reaper. When I began "running the machine" I discovered that the land was so rough that most of the wheat was jolted off the "dropper," and the blades were rapidly damaged by the irregularities of the surface. I gave the next crop the additional work of harrowing and cross-harrowing, brushing and dragging. (Rolling would have been better.) In the spring of 1869, it was cut beautifully, at the average of seven acres daily. In one day I cut ten acres, and, though this labor-saving machine made the work comparatively light, it was quite heavy enough to prevent indigestion during the day, or wakefulness at night. That season I taught an intelligent freedman to use this complicated machine tolerably well; and this season (1870) he has cut five acres of good wheat in a forenoon. In June last, I myself cut, with an Excelsior Reaper, three acres of wheat, measuring forty-six bushels after being sunned, in three hours by the watch. At one time I cut one hundred and four large bundles (sheaves) in four minutes. At this rate twelve acres per day can be cut by a single reaper, drawn by a brisk team. This area can be cut by four good cradlers, and four binders will follow closely the four cradlers; and yet, five such binders will be worked very hard to be after the reaper, going over the same area. I discovered this in harvesting my grain crop, and asked an intelligent freedman to explain it. He promptly replied, "Easy enough accounted for, sir; the reaper gets it all and the cradlers don't." The increased yield of a field in harvesting with a reaper over the cradle is at least the seed sown.

But no one need attempt to use a reaper unless his land is especially prepared for it. Much has to be done (and a great deal to be learned before it can be done) on all Southern plantations before improved implements can be successfully and economically used, and the sooner that much is done the more profitable will Southern farming become. The introduction of skilled labor will not be the panacea for our ills, because, forsooth, they are as little acquainted with our rough lands as our labor is with their improved implements. Two years ago a Northern man settled in this vicinity, and in

stocking his plantation supplied himself with every variety of improved implement, from the huge clod-crusher to the delicate hand-drill, and withal brought an abundance of white labor to use these beautiful tools to which they had been accustomed. A few days since he told me his white labor had proved a failure, and his costly implements were on hand only to be used as he would educate the laborers of the country to their use. His plantation was unfitted for skilled labor as well as for improved implements; and so are a large majority of the plantations throughout the South.

A rudimentary preparation must be begun, and need only progress gradually. A too sudden influx of skilled labor and improved implements would retard rather than perfect Southern husbandry. The intelligence of the landed proprietor directing and controlling the muscle of the negro to the use of labor-saving machines will in a few short years rejuvenate the South, and make it what it should be—the garden spot of the world.

D. WYATT AIKEN.

Phosphate Beds in South Carolina.

Much interest has been excited within a few years past by the discovery of extensive beds of phosphate of lime at the mouth of the Ashley and Cooper rivers, near Charleston, these covering from three to four hundred square miles to a depth of from six inches to three feet, and resting immediately above a deposit of eocene marl. The phosphate consists mainly of nodules formed around eocene shells as a nucleus, and furnishing about sixty per cent. of phosphate of lime. Among the nodules in question are found sharks' teeth and eocene shells like those of the marl beneath, and, according to Professor Shaler, resembling the species found at Gay Head, on Martha's Vineyard. In the upper layer of this bed occur bones of the mastodon, of extinct horses and sheep, and bits of pottery. Although some geologists consider these as belonging to the same period as that of the phosphate beds themselves, in Professor Shaler's opinion they were introduced at a later period by the agency of water. Professor Shaler thinks that these beds were formed, after their upheaval, from the marls beneath them; that the drainage of surface-water charged with carbonic acid acted upon the upper layer of the marl and removed the carbonate of lime, leaving the phosphate to accumulate in the nodules around the shells. He does not pretend to account for the original appearance of the phosphoric acid, which he thinks too great in quantity to have been derived from the bones of vertebrate animals. He suggests, however, that it might have been derived from seaweeds, some kinds of which are known to contain it in appreciable quantity, and possibly from some pteropod mollusks. Professor Shaler looks upon the phosphate beds in question as in the main much like that of the sea bottom off the southern coast, the recent dredgings and soundings from which have been found to contain an appreciable percentage of phosphoric acid.—*Harper's Magazine.*

Department of Labor and Immigration.

Rats do not Immigrate into Empty Barns.

The "one thing needful" for the prosperity of South Carolina, politically, industrially, and in every way, is an industrious and intelligent population. Men constitute the real wealth of a country. It is just this kind of wealth that South Carolina most needs to-day. She has unbounded resources of field, forest and river, from the mountains to the seaboard, that could be made to yield an almost fabulous wealth, had she the labor and capital to develop them. To have this labor and capital she must have population. She needs tillers of the soil, operatives for her factories, mechanics and tradesmen—all of which are essential to her highest material prosperity.

No less beneficial would population be to her intellectual and moral progress. It would furnish patronage and support for her churches, schools and literature, and in short, have a more magical and powerful influence than the philosopher's stone, in solving the social, industrial and political problems that now agitate the public mind.

For this population, so necessary to her prosperity, the State must in a great measure look to foreign countries. The "home supply," or natural increase of our own population is too slow in this age of steam and telegraphs. We must, of course, do what we can in this way, and not make ourselves dependent in this, as we do in too many other things, upon others; but the chief supply of population for years, must come from abroad. But let us by no means neglect the "home supply," and by way of encouraging and stimulating it, would it not be well to try to revive among our people the old Jewish faith, which was political as well as religious, that doing nothing towards increasing the population of the State was so great a misfortune as to be almost a crime, and which regarded the "multiplying" command as binding upon every Israelite. Just now, the want of the right sort of population is so great in South Carolina, that the fruitful mothers and fathers of the State should be held worthy of its highest honors and care, while those who simply *talk* of population should be left to take care of themselves. "Single blessedness" should be considered disloyal, and those found "aiding and abetting it," deserving of the severest "reconstruction" that the ingenuity and "loyalty" of a Butler could invent.

But with the greatest and most rapid success in the home production of population, there will still be a considerable lack, which may very properly and advantageously be filled with the men of other countries. Nor let it be supposed that this influx of foreigners would, with their different habits, religions and languages, make the State a Babel, to share the same fate as that which stood on the plains of Shinar. They would soon be one people with us, in all essential respects, and the "confusion of tongues" give place

to a common language that would express our common hopes and common interests. We would not be Americans, Germans, Irish and French, but all would be South Carolinians.

Our two great staples, cotton and rice, are both *foreigners*, and have done better here than they have done in their own countries—they are better as *immigrants* than as natives. So it would be with the people who come here from other countries and settle among us. That is a striking and beautiful recognition of the importance and value of the "foreign element" furnished by Solomon's Temple, whose stones were taken from the quarries of all the surrounding nations. Let it be our high ambition to make our own beloved South the "glory of the nations," and let us not be more narrow and exclusive than the ancient Jew, but invite the men of every nation to come and help us to do it. The infusion of foreign blood with our native population would be an advantage rather than an evil. England never would have been the great country she is if her original inhabitants had remained sole occupants of the soil. The infusion of the Saxon and Norman blood with the original has made a "cross" that no purely original stock has ever equalled.

But these two points being settled, that we need the foreigner, and that we want him here, the practical and difficult question is, *how* are we to get him here? Certainly he will not come unless special inducements are held out to him to come. The foreigner is no longer a beggar for a home, but homes are beggars for him. The "Great West" of our own country wants him; Brazil, a mighty empire, wants him; and, in fact, communication with all parts of the world is now so easy, so many countries are now open and inviting settlers, that it is idle to suppose that the tide of immigration will flow here unless it is specially sought to be directed here.

After considerable reflection on the subject, I have come to the conclusion that the most powerful inducement we can offer the foreigner to come here is *cheap and easy living*. It was by a trifling incident—a falling apple—that Newton discovered the great law of gravitation; and by an equally trifling circumstance I think I have made a discovery that will do South Carolina more good than ever Newton's discovery has done her. For if his discovery of gravitation had never been made, South Carolina would have gone on "gravitating," but if my discovery is not attended to she will not "gravitate" much longer. But for the circumstance and discovery.

I have noticed frequently that rats always congregate unsolicited about a barn where there is plenty of corn, but never about an empty one, from which I conclude, and I think as logically and correctly as Newton did in the case of the apple, that it is a certain and established law, that people will come to a country where there is a plenty to eat, but will avoid a country where the barns are empty. If it be said that rats are not people, I will only add that apples are not suns, moons and planets. Now, if it were a desirable thing to a farmer to have an "immigration" of rats into his barn, he would take care to keep it well filled with corn, and every rat that comes into it would be an "immigrant agent" to bring his neighbor rats into it,

and soon all the rats in the country would be in the barn. The sleek and fat appearance of the rats that visit at the well-filled barn would be a powerful appeal to ratdom to immigrate to it.

Now I am satisfied that there is philosophy in my philosophizing on the rats. And I verily believe that a dozen or two letters from immigrants in this country to their friends across the ocean, giving an account of the abundance and cheapness of living here, would do more good in encouraging immigration than the thousands which we have spent in sending out agents for the same purpose have ever done or ever will do. The rich and luxuriant clusters of grapes which the spies brought out of the land of Canaan had a more powerful effect in persuading the Israelites to enter it than the most glowing descriptions of the soil, climate and scenery could have had. These foreigners, whom we wish to persuade to our shores, however transcendental in their notions of religion and politics, are certainly not more so than we are about their stomachs. Nothing is more unreasonable than to suppose that immigrants landing at New York will come to the South, where the necessaries of life are at the highest point—bacon at retail through the country from twenty to twenty-five cents per pound, corn often from $1.50 to $2.00 per bushel, and flour high in proportion, when in the West provisions are so cheap and plentiful as to be almost unsalable. It is true that the West is suffering from *too much* provisions, as we are suffering from *too little* provisions; but, surely, any foreigner who has sense enough to be a desirable citizen, in any country, would prefer "sufferings" of the former to the latter kind. I think foreigners have shown more sense, in not coming here, than we have shown in wanting them to come. There are scarcely enough provisions in the country to feed the people already here, and yet we are inviting the whole world to come and partake of the scanty store. Surely, our generosity is greater than our prudence.

But why this scarcity of provisions—of something to eat—in South Carolina, and, to a great extent, throughout the South generally? Where else, as here in the South, can living be made so cheap and easy? What country equals it in the variety, excellence and abundance of its table products? It grows corn and all the small grains, Irish and sweet potatoes, sugar-cane, and as a gardening country is hardly equalled by any in the world. Its natural pasturage, and the mildness of its winters, give it an advantage over many, in being able to raise abundance of beef and mutton, at a comparatively small cost. Its fruits, peaches, apples, pears, etc., are as choice and abundant as the fruits of any other land. Its rivers are filled with fish, and its forests with game. And yet living in the South is "hard," and the good things she might easily have she does not have.

The explanation of this strange fact is found in the stranger fact that the Southern people have allowed cotton to absorb almost their entire means and industry; and that they have not long ago perished by famine is a striking proof of how easy it must be to live in a country where the people may almost be said to try to keep from living, and yet never quite starve. Samp-

son's great strength was surely not more a snare and ruin to him than cotton has been a snare and ruin to the South. Of the evil that exclusive attention to cotton in the South has done, and is still doing, the following Eastern story is a striking illustration:

A certain king, having discovered that there was an abundance of gold in his dominions, forthwith ordered nearly all his male subjects that were able to dig into the mines. Pretty soon there was plenty of gold, but scarcely anything to eat was in the country. The king having gone from home to visit the mines, the wives of some of the men whom he had sent to the gold-diggings, took occasion of his absence to visit the queen, and ask the favor of her intercession with the king, that their husbands might be allowed to return home, and provide something to eat for themselves and their little ones. The queen sympathized deeply with their distress, and promised to further their desire as far as she could. A most happy thought presented itself to her. Gold was the king's disease, and gold should be his cure.

Accordingly, she summoned all the goldsmiths and others that wrought in metals throughout the kingdom, and put them to making out of gold, fish, ducks, turkeys, and all the other dishes that were generally put on the royal table. These were soon finished and put away against the king's return. He had no sooner come home than he called for something to eat, and before him, in splendid array, were put the fish of gold, the ducks of gold, the turkeys of gold, etc. He admired it all very much, praised the queen's taste and the smiths' skill, but requested, as he was very hungry, that the golden dishes be removed and replaced with others that he could eat. The queen replied:

"I have given you to eat such as you have provided. You have taken the men from the fields and put them in the mines, and there is nothing to eat in the land. In the houses of your people the children are crying for bread, and are not fed when told that their fathers are digging gold for the king."

He was reproved and saw his folly, and while he did not abandon the mines, he never afterwards abandoned the fields. He still kept some of his subjects digging for gold, but he kept more digging for bread.

The Southern people are not a whit behind the king in their madness about cotton. They have well nigh deserted the corn field for the cotton field. The land is full of cotton, but empty of bread. Perhaps the best way of getting cotton off "the brain" of the Southern people, would be to *make them eat it!* This might cure them.

The South, like those unfortunate people mentioned in the Bible, has ever been "possessed" by two fierce and unyielding demons, which, in respect to color, may be called the *black devil* and the white devil. The black devil, Abe Lincoln "cast out," or "emancipated" us from his tyranny; and though the operation was very violent, and left us much bruised and sore, and though this terrible demon still returns to "torment" us in the persons of his emissaries, yet we hope to be delivered from them finally, and our wounds all healed; but from the white devil there is no hope of deliverance for the poor South yet. What a heartless devil he is! He sports himself in the miseries of his unfortunate subject, makes her weak when she is naturally strong, starves her when she might be full of bread, and holds up to her a picture of boundless wealth, while at the same time he is making her bankrupt, takes away her reason and sense and makes her one to be pitied, when she might be admired and envied. Could the South be exorcised of this white devil, as she has been of the black devil, she would soon be a greater country than she ever has been, greater in population, and greater in all the elements of a great country.

JNO. G. WILLIAMS.

THE RURAL CAROLINIAN.

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"Progress with Prudence, Practice with Science."

D. H. JACQUES, EDITOR.

ONE YEAR AGO.

One year ago we were busily engaged in preparing, as well as we could without contributors, correspondents or exchanges, the matter for the first number of THE RURAL CAROLINIAN. We had no subscribers. The promise of a few in our own State—zealous and trustworthy friends who had sent in their names in advance—and the pledged influence of the South Carolina Agricultural and Mechanical Society, were all we had been authorized to count upon; but we had faith in our enterprise, and on that faith we acted We believed that such a magazine as we purposed to issue—a first-class publication in matter, in style, and in illustration—was needed in the South, and would, in the end, be sustained.

We have done our best to bring THE RURAL CAROLINIAN up to the high standard we had set for ourselves in the beginning, and to hold it there, at least—to raise it still higher if possible. How well we have succeeded, we leave it to our readers to judge.

What have been the results of the year's operations?

We have been fortunate enough to win the most flattering commendations, not only from the press, but from distinguished agriculturists and horticulturists in every part of the country. THE RURAL CAROLINIAN has been unanimously assigned a high position among the leading agricultural journals of the world, and is now everywhere quoted as authority in matters pertaining to Southern crops and modes of cultivation.

We have now a fine corps of regular contributors, and hundreds of occasional correspondents in all parts of the South; and can say, without boasting, that no similar publication covers so thoroughly an equally wide field, or fosters so successfully such varied interests.

Our circulation, during the year, has constantly increased and extended itself, till we now have subscribers, not only in nearly every State in the Union, but also in many foreign countries; and it needs merely a little effort on the part of our present patrons to ensure such an increase in our list as will place the magazine in the hands of every reading family in the South, and thus widely extend the sphere of its influence and usefulness.

Our readers will bear witness that we have not annoyed them with appeals for help in any form. We have trusted to the interest and value of the magazine to speak for it, and to enlist the active coöperation of its readers. We are not about to depart from the rule that has hitherto governed us in this respect, but may be allowed simply to hint that the commencement of our second yearly volume offers a favorable opportunity for new subscribers to send in their names, as well as for old ones to renew, and that those who like THE RURAL CAROLINIAN, and think its perusal will benefit the farmer and the farmer's family, will do their neighbors as well as us a favor by calling their attention to it.

REPLY TO INTERROGATORIES.

A letter from a friend propounds several questions, which, being of general interest to planters, I will answer in detail.

"Some time ago you mentioned that you never fed oats in the sheaf, but threshed them out and salted away the straw. Please tell us how this is done; how much salt to the hundred weight; and whether your straw is ricked out of doors or housed."

My cow house is a framed building, thirty feet wide and forty feet long, with a capacious loft. As soon as my oats are dry enough after reaping, they are hauled in and packed

away in the cow house. As soon as the work of the crop will admit the thresher is placed before the cow house door, with the spout that ejects the straw projecting into the loft now empty. The straw is thus thrown into the loft as the oats are threshed, and trampled continually into as small a place as possible. As soon as a layer of about two feet thickness is tramped or packed upon the floor, it is sprinkled with strong salt water, and so continued until the crop is threshed. This summer I packed away in this manner the straw from near 1,000 bushels of red oats, and consider it as valuable as the same weight of the best corn fodder, and far more valuable and nutritious than half the stuff called fodder, and seen stacked out in the weather by improvident planters. I have never exposed to the weather a stack or rick of long forage, and if I had no house room for my provender, I would pen it and cover with boards, which requires no expenditure beyond the planter's own labor.

Secondly. "The custom here is to feed work animals but twice a day; the laborer eats three times daily, and why should not his animal?"

This question answers itself. I feed regularly three times a day, and water four times during the plowing season. This latter I consider as essential as the regular feeding. I once knew a planter who raised all his plow stock, and always had them fat though he fed but twice daily; a double feed at night to prevent delay in the morning, and another feed at noon. Plow stock should receive half allowance of corn with green barley during April and May; shelled oats all summer, half bushel daily to each head; a "wash" of rye meal and cut straw, or wheat bran and cut straw during the fall; and corn or peas in the winter. With such feeding regularly given, and fresh water as regularly, mules and horses will never die of botts, blind staggers, and other kindred diseases which are oftener than otherwise created by bad treatment.

Thirdly. "What is the best system of making the greatest bulk of valuable manure?"

This question must be answered by others. I have never made compost manure that was worth the trouble and expense of handling. Composting the leaves from the forests to enrich a field is, to say the least of it, robbing Peter to pay Paul. The injurious effects of hauling bulky material over arable land is never compensated for by the enriching properties of the compost. My stables are kept dry and well littered with wheat straw, and when necessary to have the stalls empty the manure is immediately applied to the earth and plowed in; to the cotton field during winter and spring; garden and turnip patch in the summer, and rye and barley patches in the fall. From the 1st of May until November my cattle and sheep are penned every night, and their manure dropped where I need it. From November until May they are housed every night, and their droppings treated as is the stable manure. The manure from the pen of fattening hogs is treated in the same way. Sowing peas on stubble land and plowing them in when in full bearing, is a beautiful theory for enriching land, and is no less beautiful practice *when practicable.* But the planter whose summer crop monopolizes his time until harvest, and then has a small grain crop to harvest and house, has but little time to look after stubble fields. There are no ugly theories in plantation life, but to make them all practicable is beyond the capacity of most men. Resting and resuscitating worn-out lands by plowing in green crops, sowing in small grain, resting in stubble, (all the while pasturing and trampling the fields with heavy cattle,) making poor land rich by manuring and subsoiling, are to my mind all chimerical ideas. I have heard men say, "this field was once too poor to sprout peas, but is now in fine tilth and getting better every year." Possibly so; but, in another portion of the plantation, another field, not so much petted, has annually grown poorer, and lost as much as the other gained. Such results must inevitably succeed our system of plantation economy, but a single generation seldom experiences or realizes the disastrous effects, because Nature in her generosity will sustain the fertility of the soil during one generation, and hence it is left for posterity to renovate what ancestry has impoverished. *Vide* our barren and washed old fields all over the

South. But this is an exhaustless subject, and must be dropped to prevent being prosy.

Fourthly. "How can we best destroy rats?"

Unhesitatingly I say by keeping and *feeding* a stock of good cats. It is a mistaken idea to think that cats only catch as many rats as they eat. It is their nature to catch them, and if regularly fed on wholesome food, they will catch ten times as many as they can eat. The better a cat is fed, the more vigilant he becomes as a mouser. Feed your cats every time you feed yourself, and you will never be troubled with rats.

D. W. A.

TO OUR SUBSCRIBERS.

With this number we close the first year of THE RURAL CAROLINIAN. As a competitor for a high place in the rural literature of this country, we have the unanimous testimony of the people and press, that it has been eminently successful. We do not feel that it is egotistical in us to say so. It is not *our opinion*, but that of the public.

And we have furnished the magazine at a very low price, so as to place it entirely on a *cash* basis. Two dollars per annum, in advance, is of more value to a business enterprise of this kind, than three dollars at the close of the year. The payment at the commencement of the year is a part of the contract, and we shall be obliged, so that we may furnish a magazine of good character, to ask of our subscribers a prompt fulfilment of this part of the mutual contract. We think that the best evidence that we will honestly fulfil our part, is our past conduct. So we must ask that our friends remit us their subscriptions as promptly as possible. They will see our position and, we hope, will appreciate the necessity which forces us to adopt the rule of *considering those who do not remit as wishing us to discontinue their magazine.* We trust we may not have a single case of the kind. We do not think we shall have many, as we are satisfied that the Southern planters and farmers feel the urgent necessity of having a live, active magazine to represent especially their interests.

WALKER, EVANS & COGSWELL,
AND D. WYATT AIKEN,
Proprietors of the Rural Carolinian.

FOREIGN CORRESPONDENCE.

We take pleasure in calling attention to the interesting article from our Brazilian correspondent. We have the promise of further communications from the same writer, and others who have established themselves in that interesting region—the Valley of the Amazon.

We have also the promise of contributions to our pages from Mexico, Cuba, the Azores, Egypt and the South of Europe; and hope to receive seeds and plants for distribution from all these sources.

THE SEASON AND CROPS.

Since our last issue, we have received a large number of additional and later reports of the season and crops in all parts of the South, but as they are generally of a similar tenor to those which formed the basis of our last month's abstract, and confirm the statements therein made, we defer the further consideration of the subject till next month. The Agricultural Department's estimate of the present cotton crop is 3,500,000 bales.

WARD'S PLANTATION GATE.—A friend reminds us that an account of this gate appeared in the *Southern Cultivator* some years ago. The article published in THE RURAL CAROLINIAN was sent by Mr. Ward himself, was revised and corrected by us, and the engraving was made in our office. We cheerfully state, however, as it was our intention to do at the time of its publication, that, in substance, it appeared in the *Southern Cultivator* in 1854. It is reprinted in the August number of the *Cultivator* for the present year, with an engraved illustration, which is *not* copied from THE RURAL CAROLINIAN.

SCUPPERNONG WINE.—We are indebted to Mr. W. L. Graham, of Lynch's Lake, Williamsburg Co., S. C., for several samples of Scuppernong wine. That with the date of 1857 was particularly fine. Such wine should command a ready sale. The other samples were of later manufacture, and lacked the mellowness of the first. Mr. Graham will please accept our best thanks for the wine, and for the beautiful and fine-flavored apples which accompanied it.

THE LOVE OF BEAUTY.—The Agricultural Society of South Carolina (formerly Charleston County Agricultural and Horticultural Society) has done a good thing in publishing the late Dr. Simms' address on "The Sense of the Beautiful," a most admirable production, which we should be glad to see put into the hands of every reading person in the land, and especially into those of the young, who are most likely to profit by the teachings of the lamented author.

The pamphlet is handsomely got up by Messrs. Walker, Evans & Cogswell, and is for sale at the bookstores.

FOR THE BOYS AND GIRLS.—We have already told our readers that *Burke's Weekly for Boys and Girls* is one of the best papers for our young folks published anywhere. It is entertaining, instructive and eminently pure and high-toned. No Southern family, in which there are children, should be without it. We observe that friend Burke is offering a rosewood piano, worth $500, for the largest club of subscribers. He is a lucky editor to have a piano to offer, and she will be a lucky girl who wins it. *Burke's Weekly* is published at Macon, Ga., at $2 a year.

OUR ILLUSTRATIONS.—After due consideration, we determined, at the inception of this magazine, to adopt the plan of copious illustrations. The almost unprecedented success of THE RURAL CAROLINIAN has justified our decision. We would ask the attention of our friends to this. It is a great claim for preference over all other Southern magazines. A simple illustration presents a tangible object much more fully to the mind than many pages of the most elaborate description. A subject illustrated makes an impression on the mind which words, alone, would totally fail to produce.

RYE GRASS.—Mr. J. L. Dove of Dove's Depot, S. C., will please accept our thanks for specimens of Rye Grass, (*Elymus Virginicus*,) which he thinks will make the best winter pasture for the South. This must not be confounded with the Italian Ray or Rye Grass, (*Lolium perenne.*)

—— The Cut on our first page is from a photograph taken on the spot, and is, therefore, a correct representation of the hedge described.

—— Several articles under the head of correspondence are crowded out; we will try to give all a place in our next number.

WORK FOR THE MONTH.

AGRICULTURAL OPERATIONS.

Cotton Picking is, of course, the most prominent item of plantation work for the month. Let this work be pressed with all your energy and force, so as to gather the lint as fast as the bolls open. You lose both in quantity and in quality by delay. Do not allow your hands to pull off the bolls in picking, as they are sometimes inclined to do. Keep the different qualities of cotton separate, so as to avoid selling mixed cotton for the price of the poorest portion of it.

Make Hay and save carefully all forage crops. You will not have too much, or if you have any to spare, your neighbor will be glad to buy.

Sorghum must be cut, ground, and the juice made into syrup; and let it be of the *best quality*. Save every blade and all the seed for feeding stock. See articles on Sorghum in several numbers of the present volume of THE RURAL CAROLINIAN.

Turnips must be planted, if not already done, as the condition of the weather and soil may permit. See "Work for the Month" in August number.

The Small Grains must be put in largely, we repeat, if we would avoid adding famine to the other evils under which we labor. See articles in last number on this subject and that of the Grasses, "Winter Pastures," etc.

GARDEN WORK.

This month opens what may be called our second spring, and if we take advantage of it, we may have an abundance of most kinds of vegetables in our gardens during the fall and winter, especially here in the low country. Sometimes great care and frequent replantings are necessary to secure a stand, so hot is the sun and so violent the rains, but perseverance generally crowns our efforts with success. Our directions must be mainly the

same as for last month. Most operations that were neglected or failed in August may, in this latitude, be repeated now.

Cabbages must be transplanted for winter heading; also *Cauliflowers* and *Broccoli*. Sow European seed for spring cabbages. Plants from American seed are more apt to run to seed in the spring.

Turnips and Kohl Rabi may be sown as directed in August number.

Carrots, Beets, Swiss Chard, etc., if you failed to get a stand last month, may now be sown with better hope of success.

Onions, for the main crop, if not already planted, may now be got in.

Lettuce, Radishes, Spinach, Mustard, will do well planted this month; and, in the low country, *Snap Beans* are still in order for planting, and will do well if the fall be favorable.

THE FRUIT GARDEN.

Budding may still be done if there be sufficient growth to make the bark slip.

Strawberry Beds should now be prepared; and, if the weather favors, plant during the month, watering and shading the plants if necessary. When planting on a larger scale than the garden's limits permits, we prefer later planting. See article on "Strawberries and Raspberries," in the present number.

FLOWER GARDEN.

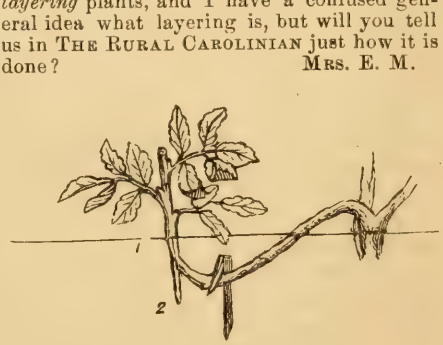
Bulbs of the early flowering plants, taken up last spring, should be set out during the present month, including Snow Drops, Narcissus, Iris, Jonquils, Crocus and Hyacinths. Sow Stock, Pinks, Marigolds, Mignonette, and other hardy annual, biennial and perennial plants; and set out rose, geranium and other cuttings. The beauty of your winter and spring garden will depend much upon this month's operations.

RURAL NOTES AND QUERIES.

PLANTS FOR NAME.—W. A. C., Rome, Ga. The plants sent us came to hand in a very bad condition, the leaves being dry and nearly all crumbled into fine pieces. Specimens should be carefully arranged in as natural a position as possible, and dried between sheets of paper, (old newspaper will do,) under a moderate pressure. The vine is evidently a species of Convolvulus or Bindweed, (to which family the Morning Glory belongs,) but we cannot make out the species from the specimen sent. The flatness of the vine is an abnormal development, such as is often observable in sweet potato vines. The other plant is a *Polygonum*, but, as in the other case, the species cannot be made out from the specimen sent. It belongs to the same natural order as the Buckwheat plant.

The plant from W. S. Hall, Rossville, S. C., was sent to Mr. H. W. Ravenel, who describes it as *Gonolobus macrophyllus*, (Michaux.) He adds: "It belongs to the natural order *Asclepiadaceæ*. Dr. Lindley says of this order in his 'Vegetable Kingdom:' 'It is more than probable that caoutchouc is contained in several; the tenacity of some species may be owing to its presence, as of *Marsdenia tenacissima*, employed for bowstrings, etc. The fibre of this and *Urtica tenacissima*, was the strongest Roxburgh ever met with.' I am not aware that any of the plants of this order have been used in this country for the fibre."

LAYERING.—You speak, Mr. Editor, about *layering* plants, and I have a confused general idea what layering is, but will you tell us in THE RURAL CAROLINIAN just how it is done? MRS. E. M.



Layering, in its simplest form, is merely the bending down of a branch or shoot of a plant and covering it with earth. Generally, it is necessary to dig a hole or trench under the branch to be layered. In any event, the soil should be loose and well enriched. Some plants naturally throw out roots wherever they touch the ground. In such cases, all that is necessary is to keep them in place by a little hooked peg, though it may be an advantage to throw a small quantity of dirt over the stem. In layering shrubs, a cut is generally made, as shown in the engraving,

to obstruct the return flow of sap. The cut should be made at the base of a bud. The hooked peg keeps the layer firmly in place. The hole is then filled up with soil. Nearly all plants may be layered with success, but some require a longer time than others to take root. Most plants layered in the winter or early in spring, will be fit to take up the ensuing winter. Green shoots may be layered in June, and in some cases will be well rooted by October or November. The figure shows the appearance of a layer, the line at 1 represents the surface. At 2, the cut part is shown, and strong branches will require to be kept in place by a stout hooked peg, as represented.

Stump Pullers.—W. W. G. There are many good stump pullers in the market. The one advertised in the August number of The Rural Carolinian seems to have merit. Too much must not be expected from any machine of the kind. They can be made great helps in clearing our fields of obstructions, but there are many of our yellow pine stumps, especially where their roots are embedded in a stiff clay subsoil, that it is entirely impracticable to pull without much digging and cutting. Gunpowder may sometimes be used to advantage in such cases.

We have no pecuniary interest in the "Jacques Stump Extractor," as some of our readers seem to suppose, and if we have any bias in its favor, it is simply because it is *a home invention;* but if we believed it to be a failure we should say so without hesitation. We are still of the opinion, however, that *it is the most powerful machine of the kind in existence*, and that its lifting capacity is limited only by the strength of its supports, (tripod or frame,) and that of the chains or hooks by which it may be attached to the stump. This strength may be great, but must be consistent with a portable size. Inquirers in regard to this machine should address J. M. Eason & Brother, Columbus street, Charleston, S. C.

Grama (Gama?) Grass.—In a report entitled "Explorations for a Railroad Route from the Mississippi River to the Pacific," date 1853-4, vol. iii, made by Lieut. A. W. Whipple, Grama Grass is frequently spoken of as being of luxuriant growth and very nutritious for stock. Can you tell us if it has ever been cultivated? If so, with what success? F.

We have not the work referred to at hand, but suppose the grass mentioned is the Gama, (*Tripsacum dactyloides.*) It is a coarse grass but is said to be very nutritious. It has been cultivated to some extent in the West, but we do not know with what success.

The Curculio.—One farmer in this vicinity is experimenting with common salt. Early in the spring he removed the dirt for some distance around the trunk of the trees and applied salt, returning the earth again. About two quarts to a good-sized tree is the quantity advised. Up to a few weeks since, when I saw the trees, the peaches had not been stung and promised a fair crop.

A. W. K.

Clover.—J. J. B. Turn over your land with a two-horse plow, but not too deeply, and subsoil if you can, having previously spread on it a good coating of barn-yard manure, if you have it; or apply superphosphates from one hundred to two hundred pounds broadcast, *after* plowing, and harrow in. Sow eight quarts of Red Clover seed (if that is to be grown alone) and brush in. Next March apply a top-dressing of superphosphate, (one hundred to two hundred pounds,) mixed with an equal quantity of plaster. We have generally sown with oats. See article on "Winter Pastures."

Nut Grass.—We are asked what we think of Mr. Kenney's proposition to tell people how to exterminate Nut Grass for the sum of five dollars, and whether his plan will succeed? We think that if Mr. Kenney has made a valuable discovery, he has as good a right to make it profitable to himself, if he can, as the inventor of a reaping or mowing machine has to take money for his invention. In regard to the real value of the process, we are not prepared to express an opinion, till we shall have subjected it to actual experiment.

Ramie.—E. J. M. The Ramie stalk and the specimen of grass came duly to hand. We have the former plant in our own grounds. The Ramie question has been pretty thoroughly discussed in our pages. We hope much from the plant, in the future, but with our present light on the subject cannot advise you to plant largely at present. Keep

a stock of plants for root cuttings, for it may, sooner than we think, become an important interest in the South. The grass you sent is badly broken up and the heads mostly gone, so that we can only say that it seems to be a species of Meadow Grass, (*Poa*,) perhaps the dwarf or early Meadow Grass, (*P. annua.*) Send us a specimen next season, pressed when in flower.

Latin Names.—We have explained the reason for the occasional use of botanical names in our pages. It is often through them that the least learned of our readers finally get the information they want in plain English. We try to make ourselves understood by everybody.

Cotton Seed for Stock.—Will boiling cotton seed destroy the poisonous properties which they contain in a crude state, and make them good food for hogs? (You know they will kill hogs when sound.) Were it not for this fact, cotton seed would make an an excellent cheap feed for hogs. C. L.

Will horses and mules work and thrive upon cotton-seed oil cake?

Is there no danger to be apprehended from intestinal inflammation, as in the case of hogs, from its continual use as food?

Is there any one who has, during the present year, used the oil cake as above indicated, and if so at what cost, and in what quantity?

S. S.

Clover.—Will not some one give us an article upon Red Clover? What kind of soil, the preparation of the same, the time of sowing, mowing and gathering seed? Will a sufficient quantity of seed come up when the Clover is turned under without sowing the seed? B. D. H.

Preserving.—I much wish some one would report the nice ways of preserving figs and bitter oranges. I have heard there are ten ways of doing the latter. Mrs. W.

Strawberry Planting.—M. H. The best time to set out strawberry plants depends upon circumstances. As a general rule, in this climate, and for a garden bed where they can be watered and shaded, if necessary, we would plant in September or early in October; but for planting on a large scale should defer the work till later, as many of the plants may be killed by drouth, where frequent waterings are impracticable. Strawberry seed may be sown any time during the fall or early in the spring.

Murrain.—H. M. C. We fear there is really *no* reliable remedy for this disease, though cattle sometimes recover under various modes of treatment. If any of our readers know, from actual experience, any remedy, we shall be glad to publish it. To prevent the spread of the disease the most rigorous measures should be taken, as it is eminently contagious.

Lime as a Manure.—Several correspondents want an article from some one who has experience in the matter, on the best mode of using lime as a manure.

Tobacco Curing.—B. D. H. See article in August number on this subject.

Forest Leaves.—S. B. wishes to know the best way to utilize forest leaves. Will some one tell him? Shall he use lime to assist in decomposing them? or haul them upon the field and plow them in at once?

Ramie Stalks.—T. T. We do not think the small quantity you have could be disposed of to any profit, even were it in the proper condition.

Corn Planter.—Where can I buy a Sinclair Corn Planter, and what is the price?

B. D. H.

MERE MENTION.

——Mr. W. G. Vardell exhibits at our office two fine squashes, grown on his farm on Charleston Neck. The first is a Hubbard, weighing 13½ pounds, and the other a very fine specimen of the Yokahama, weighing 12¼ pounds. The latter is a remarkably solid, dry and sweet squash, and we are glad to know that it succeeds so well here.

——A. L. Hatch, nurseryman of Jackson, Miss., is disseminating a *purple-leaved peach*, which originated in that vicinity. The foliage and wood are of a deep purple or violet color, similar to those of the purple-leaved Beech or Berberry.

——E. Whitney & Co., of Murfreesboro', N. C., have patented a process for making a fertilizer by burning pine-straw leaves and other vegetable matter under a layer of earth. They claim for it great value as well as cheapness.

——The apple crop is remarkably good this season throughout the Union.

——The grape crop is very good in the South generally.

——A few rows of millet running through the cotton field, and attracting many birds, has been tried with good results for checking the ravages of the cotton caterpillar.

——Lime water drives worms from lawns.

——Ransom's mode of trapping the curculio does not work in hot weather.

—— Florida papers estimate that this year's pineapple crop of that State will be worth $200,000.

——A company with a large capital has been organized in Mobile, Ala., for the purpose of engaging exclusively in the importation of coffee, and the merchandise of the West Indies and South America generally.

——Peanuts are usually sent to market in sacks containing about three bushels.

——New land is excellent for turnips; so is any light vegetable mold, sod included; and the ashes of sod best of all, says an eminent authority.

——E. Lawrence, on his place below New Orleans, makes a third more corn and sugar, with a third less labor, than any of his neighbors, because he stirs his fields eighteen inches deep with a steam plow.

——Forty years ago one could buy a good cow for $12; now it takes $80. Yet forty years ago flour was but little cheaper than in 1870. As a nation we make too much grain, and do not raise enough stock.

Correspondence.

AGRICULTURAL CONGRESS.

Editor of The Rural Carolinian:

The necessity of coöperation amongst ths agriculturists and agricultural organizations of the Southern States is becoming more manifest every year. Public improvements, the diffusion of agricultural science, and the protection of the rights of agriculturists, have not hitherto received the attention which subjects of such vast importance to our prosperity demand, and which are best secured by voluntary association and combined action.

The interests of the cultivators of the great staple productions of the Southern States demand a central and united organization, the object of which shall be the promotion of improved methods of culture, (specially adapted to the productions peculiar to our section,) the improvement of our labor system, the encouragement of foreign immigration, and the diversification of our agricultural productions.

A general desire for an organization with these objects in view is expressed by leading agriculturists throughout the South.

It is, therefore, proposed to organize an association, which shall meet annually at some accessible point in one of the Southern States, where agriculturists from every section shall assemble, to deliberate in council, and fully communicate the result of their experience as tending to the advancement of the arts of husbandry and kindred subjects.

It is suggested that the initiatory assembly convene at Augusta, Georgia, during the holding of the great Fair of the "Cotton States Mechanics' and Agricultural Fair Association," in October next.

In furtherance of the foregoing, the undersigned have been appointed a joint committee from the Cotton States Mechanics' and Agricultural Fair Association, and from the Augusta Board of Trade, to make all necessary arrangements for the first meeting, which will be held in this city October 26th, 1870.

The several State and county organizations throughout the country are cordially invited to send delegates.

The first business before the assembly will be the permanent organization of an Agricultural Congress—election of officers, etc.—to be followed by free discussion of agricultural subjects.

The central location of Augusta, and its extensive railroad connections, make it easy of access from all parts of the country.

Arrangements are made with the various railroads to carry delegates free of charge, or at reduced rates.

Delegates, in order to avail themselves of this privilege, will have to present duly authenticated certificates of appointment to the Agricultural Congress.

Associations are requested to report, as early as practicable, the names and number of delegates they may appoint.

All communications will be addressed to Mr. E. H. Gray, Secretary Cotton States Mechanics' and Agricultural Fair Association, Augusta, Georgia.

WM. H. TUTT,
President C. S M. and A. F. Association.
EDWARD THOMAS,
President Augusta Board of Trade.
M. L. BONHAM,
South Carolina.
P. J. BERCKMANS,
Augusta, Ga.
T. P. BRANCH,
Augusta, Ga.

Augusta, Ga , July 15, 1870.

EVERGREEN GRASS AGAIN.

Editor of The Rural Carolinian:

My attention has been called to an article entitled "My Experience with Various Grasses," in your July number. The author of that article entirely misinterprets my motive in calling the attention of the Southern people to the virtues of "Evergreen," Tall Oat Grass, (*Arrhenatherum avenaceum,*) Maj. Stanford's Wild Injun, Rocky Mountain, or whatever else the grass may be styled.

This attack, with my ignorance of its previous history, enlightens me so far as to give me the satisfactory evidence which I so much needed in substantiating an expressed opinion of mine, that this grass would flourish in the Southern States. So far, the author has been of material service to me, inasmuch as experiments must now cease. The fact has been established by many that the above mentioned grass succeeds well in the Southern States. Now, Mr. Editor, you will bear witness to the fact, that I never claimed that the Evergreen Grass was a variety superior to many of the grasses used in grass-growing sections. It would be folly to compare it with Blue Grass, and others I might mention, yet what sane man would attempt to grow fields of Blue Grass in the Cotton States. I merely claim for the Evergreen that, for poor uplands, it will more readily adapt itself to the climate and soil of the Southern States than any other grass with which I am familiar, while it makes both good hay and superior pasture for milk cows, and beef cattle. So much for the Evergreen Grass.

With regard to the "Red Top," I heartily concur with "G.," as his experience and my own does not differ, and I will say that for meadows of the Southern States, it has no superior. But here in the Valley of Virginia we have so many better grasses than it, that it stands on the same footing as Evergreen; if anything, the latter is preferred—the one for moist lands, and the other for uplands.

I find but two objections to "G.'s" article. One is, that it evidences a lack of perseverance, and that, when he found a good grass adapted to the Cotton States, he was not content, but endeavored to find some other grass which would grow without attention, in spite of close pasturing, etc., while I am content if I can find any varieties at all which it will pay to grow in the South. I think I have found one adapted to poor uplands—"Evergreen"—one for rich uplands—Orchard Grass. Rich bottoms should be sowed down in Clover, Red Top, and Randall Grass seed.

I had promised to introduce "Randall Grass" to your readers, as I have experimented successfully with it, but as a distinguished botanist of North Carolina has promised to enlighten them, I am too happy to give way to him, as he fully understands his subject. Could you see the Randall Grass in my meadows in front of my door, you would be highly pleased with the variety.

Again, Mr. Editor, in order to set myself right with your readers, I will repeat that my sole effort has been to find from the many varieties of grasses used, some varieties which can be made remunerative to the cotton planter. So far, my experience goes to show that other grasses than those I have named will not suit our Southern climate.

Pardon my haste. Enclosed find specimens of "Randall" and "Evergreen" Grass stalks.

"MORE ANON."

FACTS AND FIGURES.

Editor of The Rural Carolinian:

Please publish the following note and oblige the writer:

Mr. JAMES C. MCCANTS, *Georgetown, S. C.:*

Dear Sir: Your "*Facts* and Figures for Rice Planters," in the July number of THE CAROLINIAN has attracted my attention. I am quite aware of your experience in the cultivation of rice. I am aware also that you have had the advantage of cultivating one of the very best rice plantations in the State (all things considered) since the close of the war.

Please answer a few questions regarding *facts.*

Did your crops of 1866, 1867, 1868. or 1869, justify your figures in your article of "Facts and Figures for Rice Planters?"

"There is no use in remaining blind to facts."

Please enlighten us with figures, *in fact,* of your crops of 1866, 1867, 1868 and 1869, or the average of the four, or your best crop of either of the above years. These correctly stated would be *facts.*

Your figures look too pretty *on paper* to be disturbed by AN OLDER PLANTER.

July 12th, 1870.

CORRECTION.

Editor of The Rural Carolinian:

In my article entitled "Facts and Figures for Rice Planters," in your July number, I detect the following error, viz.:

1st Harrowing, - - -	$150 00
2d Harrowing, - - -	150 00
It should have been—	
1st Hoeing, - - - -	$300 00
2d Hoeing. - - - -	300 00

Please make the correction, and oblige

JAMES C. MCCANTS.

Georgetown, S. C., July 20th, 1870.

METEOROLOGICAL OBSERVATIONS.

Editor of The Rural Carolinian:

I enclose table of average temperature at this place from June 20th to July 20th, in-

clusive. The wind was Northeast three or four days of the time, (10th to the 20th of June,) but there was little wind in any direction. There was a good deal of lightning. The coolest time was the morning of 30th June, when the mercury stood at 68°. There was a considerable shower on the 16th of June; rain again on evening of 26th, and a light shower on the 9th of July.

AVERAGE TEMPERATURE.

June 20th to June 30th.

Morning.	*Noon.*	*Night.*
76° 4.	88° 1.	74° 8.

July 1st to July 10th.

64° 1.	88° 9.	73° 5.

July 10th to July 20th.

72° 2.	87° 8.	78° 4.

JAMES D. WYLIE, M. D.

Reachi, De Sota Parish, La.

DOES SUBSOILING PAY?

Editor of The Rural Carolinian:

I am anxious to have this subject thoroughly ventilated, and would like to provoke the discussion of the question of subsoiling on lands with a sand subsoil, in order to draw out the views and opinions of *practical* planters in your valuable and most useful magazine.

This is my first year of cotton planting, and I am only cultivating thirty acres cotton and eleven acres corn. The land originally good, has been under cultivation over seventy years and is worn out. The subsoil is a red sand in some places, showing iron. Where the corn was planted, cotton had been last year, and the beds were levelled by running one furrow with the twister on either side the old bed—the usual mode of proceeding in this section. The land was then laid off with bull tongue across the old beds four and a half feet, the corn to be dropped at the outer sections four and a half by three and a half feet. The field appeared all of the same quality, and I took sixteen rows, equal to one acre, and opened them with two furrows by a shovel running up and back as deep as a large strong mule could pull it. In this trench I run two furrows with a double horse subsoil, (up and back,) about ten inches, making in all sixteen or eighteen inches. I had no manure, (as I could not spare the commercial fertilizers from the cotton,) and planted and worked the whole field alike, as I wanted to test the efficacy of the subsoiling. The corn is now made, and neither I nor any one else can perceive any difference in the ears or stalks where the land was subsoiled. I cannot judge of the advantage to the cotton, as the entire thirty acres was subsoiled. I consider the labor, as far as the corn is concerned, thrown away.

Now, Mr. Editor, I question the utility of *subsoiling on any land for corn.* It has no tap-root, and continues to throw out *surface roots* as it grows. If the subsoil be stiff clay, the subsoil plow furrow may act beneficially, as an under (or covered) drain, though imperfectly. *Deep plowing*, for any crops, even those without tap-roots, and on any lands, is advantageous—it brings the poorer soil from beneath within the action and influence of the atmosphere, and by loosening the soil to a greater depth, allows the action of the atmosphere to penetrate deeper, and also allows the moisture from beneath to arise. But much of this effect is lost when the subsoil is sand; and I look upon *subsoil plowing* in a sand subsoil as labor thrown away, as the first heavy rain will settle and pack the particles of sand as firmly together as before they were disturbed.

I would like you to elicit the views of some practical old planters on this subject.

If I can carry out my views, my intention is to set aside five acres of land of average quality; to give each acre a different mode of *winter* preparation; manure and work each acre precisely alike and see the results. I am sure half the battle is in *winter* preparation of the soil. The old system of forty acres to the mule—with mule and boy trotting round the crop all the year, getting into each field just ten days later than he ought to have been, then to find grass too deeply rooted to be killed by the plow; hard work, light manuring and poor returns—labor uncertain and uncontrolable, and money at twelve per cent., I am confident is a money losing and ruinous game. Can you not get your contributors to give the *location* of their residences? Experiments tried in one part of the State, (especially grasses,) will not do in another, and much of the interest in an article is lost from not knowing *where the writer resides and in what district his experiment has been tried.*

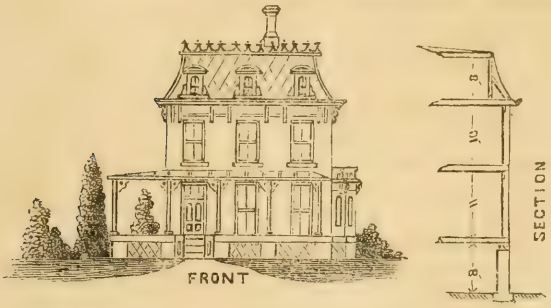
Gadsden, S. C. SUBSCRIBER.

[The whole subject of plowing and subsoiling needs careful experimenting, close study, and a more thorough exposition than it has yet received among us. For our own part, we are convinced of the benefits of deep plowing and subsoiling, as a general principle; but it is equally evident to us that there are limitations and exceptions which are not always duly considered. We invite our correspondents to give us any light which their experience may throw upon the subject.—ED.]

BAKED SQUASH AND PUMPKIN.—The dry winter squashes are excellent cut in pieces two or three inches square, (and pared if the skins are thin, not otherwise,) and bake in a hot oven an hour and a half. The large sweet pumpkin is also very good, treated in the same manner.

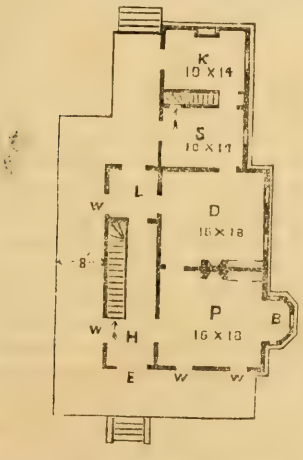
Department of Rural Architecture.

DESIGN FOR A CITY RESIDENCE.



The readers of THE RURAL have this month presented to them a design for a City Residence, surmounted with a Mansard or Chateau roof, a style now becoming very popular in this section of the State.

This design is now being carried into execution in this city, and so far as the work has progressed, it bids fair to come together well and present a very pleasing appearance.



PLAN 1ST STORY

By reference to the plan of first story herewith presented, the arrangement of the rooms will readily be seen. P, represents the parlor; D, the dining room; L, the library or sewing room; S, the butler's pantry; K, the kitchen.

Under the pantry and kitchen, a basement is contemplated and is reached by a narrow stair-way represented on the plan. In the second story, the arrangement of the chambers are somewhat similar to the rooms in the lower story, with the exception that a servants room is placed immediately over the pantry, and is reached by a flight of stairs over those that lead below to the kitchen.

The section will show the heights of the various stories, and it will be seen from the manner in which the roof is constructed that very fair rooms may be had in that portion of the building.

The separate stories are reached by stairs placed vertically over each other, and occupying that portion of the house indicated on the plan.

The front elevation only is herewith presented, as giving a fair idea of the cornice and the roof, which finishes in the same manner all around the body of the house. The rear or kitchen wing is kept down and finishes below the main cornice.

Complete specifications and bills of materials have been prepared to accompany the original design, and the cuts herewith presented have been reduced expressly for this magazine.

The scale of the drawing is 1-32. This is intended to be a frame building, and to cost in the neighborhood of four thousand (4,000) dollars.

ALEX. Y. LEE,
Architect and C. E.

Columbia, S. C., Aug. 4, 1870.

PLASTERING.

1 bushel cement or 1¼ cubic feet, will cover 1 inch thick, 1 1-7 square yards; ¾ inch thick, 1½ square yards; ½ inch thick, 2¼ square yards.

1 bushel cement and 1 bushel sand, 1 inch thick, will cover 2¼ square yards; ¾ inch thick, 3 square yards; ½ inch thick, 4½ square yards.

1 bushel cement and 2 bushels sand, 1 inch thick, will cover 3⅓ square yards; ¾ inch thick, 4½ square yards; ½ inch thick, 6¾ square yards.

22 bushels lime, 44 bushels sand and 3 bushels hair, will cover 75 superficial yards, render and set, on brick; or 70 yards on laths.

Department of Literary Miscellany.

THE BLUE AND THE GRAY.

By the flow of the inland river,
Whence the fleets of iron have fled,
Where the blades of the grave-grass quiver,
Asleep are the ranks of the dead;
Under the sod and the dew,
Waiting the judgment day;
Under the one, the Blue;
Under the other, the Gray.

These in the robings of glory,
Those in the gloom of defeat:
All with the battle blood gory,
In the dusk of eternity meet;
Under the sod and the dew,
Waiting the judgment day;
Under the laurel, the Blue;
Under the willow, the Gray.

From the silence of sorrowful hours
The desolate mourners go,
Lovingly laden with flowers
Alike for the friend and the foe;
Under the sod and the dew,
Waiting the judgment day;
Under the roses, the Blue;
Under the lilies, the Gray.

So, with an equal splendor,
The morning sun-rays fall,
With a touch impartially tender,
On the blossoms blooming for all;
Under the sod and the dew,
Waiting the judgment day;
Broidered with gold, the Blue;
Mellowed with gold, the Gray.

So when the summer calleth,
On forest and field of grain
With an equal murmur falleth
The cooling drip of the rain;
Under the sod and the dew,
Waiting the judgment day;
Wet with rain, the Blue;
Wet with rain, the Gray.

Sadly, but not with upbraiding,
The generous deed was done;
In the storm of the years now fading,
No braver battle was won;
Under the sod and the dew,
Waiting the judgment day;
Under the blossoms, the Blue;
Under the garlands, the Gray.

No more shall the war-cry sever,
Or the winding rivers be red;
They banish our anger forever
When they laurel the graves of our dead!
Under the sod and the dew,
Waiting the judgment day;
Love and tears for the Blue;
Tears and love for the Gray.

M. E. P. Finch,
[*In Atlantic Monthly.*

PROFESSOR WILLIAM HUME.

Death has recently removed from among us one of our men of sterling worth. To those who knew Dr. Hume personally, many of the most marked and prominent features of his character were familiar. His kind and affable manners were so strongly marked that none could approach him without at once realizing that he was in the presence of a true and loyal man, in the largest significance of these pregnant terms; that sincerity and candor were ever speaking out in each word that came from his tongue; that genuine philanthropy prompted each thought, and word, and act of his life; that a most charitable forbearance constantly deterred him from over-zealously pressing his own opinions upon others, while an ardent thirst for knowledge and truth as constantly impelled him to give the most patient and appreciative attention to the thoughts and views of others.

All this was prominent enough, in his daily and hourly intercourse with the world, to be seen and known of all men. But there was, deeper than this surface showing, an inner character, known and measured only by those who were his familiar friends, which possessed a richness of noble, and generous, and loving aspiration, that was ever prompting him to deny all selfish motives and indulgences, and to join his unstinted efforts to

those of the wise and benevolent in every device or undertaking which had the good of his fellow-men for its object.

The simplicity of his character was like that of the child, and the modesty of his personal deportment completely veiled the depth and accuracy of his acquirements. It was evident to all who made his acquaintance that he was a good and gentle, as well as a learned, man; but it was only those who had his intimacy and friendship who knew what a vast storehouse of accurate and general knowledge his memory was. Still fewer ever dreamed how many weary hours and sleepless nights he devoted to the investigation of subjects in which the public good or the interests of science were concerned, but from which he was to reap no individual advantage. While to the causal acquaintance, or to those who did not know him personally, he seemed no other than the theorist or closet dreamer, his few familiar friends were aware that many of the most practical and useful measures of the day owed their origin and development to his inventive mind.

But large, and accurate, and valuable as his mental acquirements were, his qualities of the heart were doubtless his most striking characteristics. The world produces many learned men, while real philanthropists are rare. But rarest of all is that modest, truthful, loving, self-denying being who toils for others while his own wants are but scantily provided for; and, in his love for his fellow-man, utterly forgets that himself is one, and perhaps the most needy, of them.

In early life Dr. Hume devoted himself to the study of medicine, and he was bred to that profession in the school of such high-toned men as Irvin, Baron, the Wilsons, Simons, Prioleau, etc. From the teachings and examples of these men he went to London, where he spent much time, and attracted the notice of Astley Cooper, and others of those well-known surgeons, by his assiduity and skill. On returning to this country he commenced the practice of medicine and surgery; but his inquiring mind soon drew him away from the active to the investigative paths of science. Mechanical philosophy and chemistry became favorite pursuits; and while he informed himself fully on these most important studies, he did not fail to keep himself thoroughly posted upon matters of general scientific interest.

From time to time he became interested in many literary adventures, and ever seized the laboring oar and gave impulse and direction to the movements in hand. On these occasions it was matter of no small wonder to those who were not familiar with the extent, variety and accuracy of his information, how readily he could exchange one professorial chair for another, and lecture, with almost equal fluency and eloquence, on variously diversified subjects.

There was a charm of graceful ease and ready fluency about all he said that made his prelections attractive to the utmost degree. Never rigidly restricting himself to the scholastic theories or the dogmatic dicta of his subject, but most practically and artistically introducing utilitarian views and thoughts, germain to the matter in hand, he always succeeded in investing his lessons with a charm which his subject scarce gave promise of. Chemistry was made piquant and interesting by the introduction of illustrations and experiments captivating to the eye and amusing to the mind. Mechanical philosophy was demonstrated to be a useful as well as an abstruse science, by exhibitions so closely connected with the application of its principles to the daily uses of life as were calculated to exhibit this application in its most intelligible way. Every new adaptation of scientific principles to every day life was plainly and perspicuously explained, and in this way he managed to give attractiveness to the dryest subjects. He was ready, at the call of his fellow-professors of medical science, to instruct the young engaged in that pursuit, and his chemical lectures were made to assume such garments as rendered them attractive and useful in view of their future wants, when they should come to make for themselves the practical application of the principles they were being taught.

In the State Military Academy, in like manner, his lectures on Mechanical Philosophy were full of practical adaptation of the principles of this useful science to the daily wants of life; and no new application of these ever escaped his observation, or failed

to come before the view of his classes in all their most useful and practical aspects.

As an analytical chemist he was constantly applied to for analysis of soils by the agriculturist, or of poisons by the men of the law. The processes of fermentation and distillation were familiar to him, and he had successfully converted the juice of the grapes which grow so luxuriantly in our soil and climate, into luscious wine. The sorghum cane early attracted his attention, and its valuable juice, under his hands, became subservient to the wants of the country at a most important period in our history.

In spite of so many literary and scientific avocations, Dr. Hume found time to serve his fellow-citizens, for several terms, in the City Council. It was here that the writer of this sketch first learned to appreciate the practical nature of his mind. The vast mass of facts he had accumulated from his varied studies here found their adaptation to the wants of the community; and though it is not contemplated to enter into any details, a passing reference may be made to his contributions to one of the most important subjects that can engage the attention of such a body. Hygiene and the history and nature of epidemics had received a large share of his attention. Originally a non-contagionist, he had recently changed his opinion, and, at the time alluded to, was firmly convinced that genuine yellow fever was exclusively an exotic. It was the opinion of the writer, on the contrary, that this fearful disease was mainly due to badly planned, carelessly executed and unsettled laws of local hygiene. To have brought such abstruse professional discussions into Council, and before the community, would have resulted in still more obscuring these really dark points. With that eminently practical good sense, and that genuinely humanitarian self-abnegation which so remarkably distinguished him, the plan of coöperation instead of antagonism was cordially accepted, and the result was a series of sanitarian measures which has given, as its result, a longer exemption from the scourge of our city than has been known for more than twenty years. On the one hand, one of the best Quarantine laws in this country does as much towards excluding the tropical yellow fever as such laws can do. And, on the other, deep drainage, with tidal washing and rigorous scavengering, including the transportation of such refuse far beyond the inhabited parts of the city, and strict prohibition against filling low lots with any kind of decaying or putrifying material, equally prevented all danger from local origin. Happy would it have been for our city if these views had continued to sway its counsels, and if no relaxation or neglect of these latter measures had been again allowed to endanger our future prospects.

With strict Quarantine regulations and judicious sanitary measures, as much will be effected against epidemics as the present state of science permits us to hope for. When further advances are made we may yet hope to curb the winged messengers of the air, and then we will learn how to correct that, as yet, inexplicable atmospheric condition which has for years been known to exist, at times, as deadly in its effects as it is incomprehensible by our senses—"*the epidemic condition of the atmosphere.*" To the consideration of this question, Dr. Hume was widely awake. But science has not yet gone far enough. When it has given us the means of investigation may we find one as eminently truthful and just to examine and apply them.

The latter years of Professor Hume's life were passed in pain and slowly decaying health. These sufferings he bore with the same patient and uncomplaining gentleness which marked his whole life. And so he did those other sufferings—poverty and despair—which fell on him as heavily as on any of us. Having been deprived of all his employments by the General Government and the State, his means of support were reduced to the merest modicum; and the loss of all his scientific apparatus having cut him off from his cherished occupations, it may readily be supposed that the smooth waters of his tranquil existence were stirred to their utmost depths; but no murmurings escaped him. The circle of his occupations was narrowed, but it still remained as perfect as ever, and at last he lay down to die as quietly and as patiently as he had lived. He died as a philosopher—at peace with himself and his fellow-men.

Hygiene and Household Economy.

WINE WITHOUT FERMENTATION.

The late Professor William Hume, of this city, was the discoverer of a new method of making wine, which is worthy of more attention than has yet been accorded to it.

At the South, unfortunately, where the grape thrives most luxuriantly, and reaches its highest degree of sweetness and flavor, the climate is unfavorable to wine-making. The grape ripens in August, when the temperature is generally too high for the vinous fermentation to be properly carried on, except in cellars. Our wines become too sour to suit American tastes. Some of them excite a suspicion, at least, of vinegar, although analysis fails to detect any acetic acid in them.

Finding that the *must*, or expressed juice of the American grape, is abundantly supplied with sugar, flavor and aroma to make it palatable and even delightful to the taste, Professor Hume, applied himself to the discovery of some process by which this juice, or at least all that is valuable about it, may be preserved, and those troublesome and sometimes unmanageable fermentations which destroy its sweetness and flavor, be entirely prevented. The result of his experiments was a new process, in which fermentation is entirely dispensed with. Wine-makers opposed it, as was to be expected, and declared that the beverage produced was not wine, but a grape cordial. They could not deny that it was pleasant to the taste and wholesome. We tried the new method on several occasions, years ago, and the results confirmed us in the opinion, that the process is a valuable one, for family use, at least. It may be briefly set forth as follows:

1. Having removed all unripe or decayed berries, mash the grapes with the hand, or otherwise, being careful not to crush the seeds.

2. Press out the juice and pour it into a suitable vessel, prepared with a faucet near the bottom.

3. Add alcohol (the deoderized is best, but the common will do) at the rate of a pint to the gallon. This will effect the precipitation of the fecula and the preservation of the juice perfectly, but if you want a stronger wine add more.

4. Cover the vessel with a cloth, and allow it to stand forty-eight hours.

5. Draw off first the clear juice and then the sediment, passing both through a sand filter, but keeping them separate if practicable.

6. Put the wine into a cask and close it carefully air-tight. It may remain there till wanted for use, or be drawn off after a few weeks, and bottled.

7. Digest the *marc* (skins, seed, etc.) one or two weeks in a mixture of equal volumes of alcohol and water, in a close vessel, and press and filter as before, for a strong cordial.

8. Care must be taken that nothing be used in the manufacture out of which the alcohol can extract any flavor or the wine will be injured.

9. The evaporation of the alcohol, after the process is completed, must be carefully guarded against, by the close stoppage of the casks and bottles. The latter should be sealed with a composition of Burgundy pitch, wax and tallow, using enough of each to make it of a proper consistency—neither too soft nor too brittle—melt it over a slow fire, and dip the ends of the bottles into it.

RECIPES.

Tomato Preserves.—Take the round, yellow variety as soon as ripe, scald and peel; then to seven pounds of tomatoes add seven pounds of white sugar, and let them stand over night. Take the tomatoes out of the sugar, and boil the syrup, removing the scum. Put in the tomatoes and boil gently fifteen or twenty minutes; remove the fruit again and boil until the syrup thickens. On cooling, put the fruit into jars and pour the syrup over it, and add a few slices of lemon to each jar, and you will have something to please the taste of the most fastidious.

Tapioca Cream.—Soak two tablespoonfuls of tapioca over night in just enough water to cover it. In the morning, boil one quart of milk with the tapioca, add two-thirds of a cup of sugar, a little salt, and the beaten yolks of three eggs; stir them in the milk and remove from the fire. On the top put the three whites, beaten to a stiff froth, and flavor to taste. To be eaten cold.

Tomatoes.—Use tomatoes largely, both at breakfast and dinner; take them hot or cold, cooked or raw, with vinegar or without vinegar, fried in sugar and butter, or stewed with salt and pepper. Their healthful properties consist in their being nutritious, easily digested, and promotive of that daily regular action of the system without which health is impossible.

Fig Preserves.—*Farm and Home* says: Gather the figs when *just ripe*, remove the skin by scraping or peeling, put them in salt and water to remove the fig taste. Freshen them by putting them through two or three scalding waters till the salty taste is lost, and in the last water put a small piece of alum to harden. Make a syrup, (a pound of sugar to a pint of water,) put in figs as soon as the syrup is clear, and boil them till transparent. Add more water if the syrup becomes too thick before the figs are done.

Wine Recipe.—Measure the berries or grapes, and bruise them. To every gallon add one quart of water, and let the mixture

stand twenty-four hours, stirring occasionally; then strain the liquor into a cask, and to every gallon add two pounds of sugar. Cork it lightly until fermentation subsides; then tighten the cork, and let it stand for three months. It is then ready for use.

This recipe is applicable to all berries or grapes suitable for wine making.

PREMIUM BREAD, Fair of 1869.—Soak the yeast cake in a cup of milk and warm water, set where it will keep warm until the cake is dissolved. Pour into a large vessel and beat into it a good pint of sifted flour to a thick batter. Set to rise in warm place, when well risen, work it into a quart of sifted flour and set to rise again, having put into it a little salt and lard if desired.

TO AGENTS.

While we would be much obliged to our agents to use their kindly influence in securing it, yet we CANNOT AFFORD to allow them—the agents—commissions for renewals of subscription.

This course is customary with all magazines.

WALKER, EVANS & COGSWELL,
AND D. WYATT AIKEN,
Proprietors of The Rural Carolinian.
Charleston, S. C., August 20th, 1870.

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